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DANGERS OF MIXED REASONINGS.

The "cloud on the horizon" is that there is imminent danger of partial confiscation of property on account of mixed reasoning of courts and commissions, and inadequate presentation of the case by the corporation.—H. H. Crowell.

Public Ownership Wave Recedes.

Since the present session of Congress began, there has been a marked falling off in the agitation in favor of government ownership of railroads and telephone and telegraph lines. This was to be expected in view of conditions in this country and the whole world at large, which calculated to sober the public mind and induce men to brush aside schemes liable to further disturb business affairs.

Congressman Lewis is to the front again with his bill providing for the Federal government taking over the wire business of the United States, and an effort is being made to get the labor unions back of the movement. Undoubtedly there will be more or less talk of the plan, particularly from political statesmen seeking an issue on which to ride into office, but the chances are that the more the matter is sifted down, the less desirable will it appear to most minds.

Government ownership of railroads has the prior right of consideration, and it would be a brave man who would strongly advocate that at this time. Few citizens—no matter what their grievances against the operating companies—would vote in favor of increasing the public debt billions of dollars. On the other hand, the present condition of the railroads, with net earnings so low as to threaten dividends, show how difficult it would be for the government to make a showing even as good as the railways themselves make. The elections last November also indicated that the people are not keen to experiment much more, or to take a business machine apart "to see what makes it tick."

The New York Journal of Commerce, in commenting upon the Washington situation, says:

"If present indications are any guide, there will be little or no advance in the government ownership proposition this winter, and perhaps not for a good while thereafter. The fact that the roads are in such difficult straits for income and need an increase of rates, which most men of any degree of fairness now admit is practically necessary, is taken to indicate that government ownership would find it hard to cut the rates below what they now are, or to make a satisfactory income on the present rates. In this same connection, the mounting costs of railroad valuation—a scheme which is not turning out very successfully as an economic proposition—have 'scared' a good many congressmen, and they look with more disfavor upon a transportation enterprise which would compel the government to 'hold the bag' while the public paid the bills.

Another consideration is the realization that to take over the telephone and telegraph service, as was pointed out by the president of one of the chief companies in the field, would, even on a basis of strict physical valuation, cost more than the government could pay expenses on, were it to charge lower rates for messages than now obtained. In other words, conservatism in this case has evidently sprung to some extent from greater study and investigation of conditions and simply represents the results of sober second thought."

The report of the House committee on post offices and post roads, in dealing with the proposition of the government owning the postal railway cars, declares such a policy would be unwise. Senator Jonathan Bourne was chairman of the subcommittee which wrote the report, which concluded: "We believe that it would not only be expensive for the government to own the cars, but believe it unwise because it would be the beginning of a general government ownership policy,

eventuating in bureaucratic paternalism, inertia and, inside of a century, governmental dissolution. Government ownership of part of the railway cars would soon be followed by ownership of the railroads themselves, telephone and telegraph companies, express companies, and electric and water means of transportation."

The report then estimates that this would mean 3,000,000 government employes. There are now 469,000. Three million job-holders could carry presidential elections with ease, as the records show that the last ten elections were decided by plurality votes ranging from 7,000 to 2,500,000. "Governmental efficiency and economy of operation can never equal that of private enterprise" concludes the report, "and the whole desiderata of government should be equal legal opportunity for all and limitation on individual liberty only in the prohibition of preying on the personal or property rights of others. Our present drift to departmental rule and regulation, instead of a government by law, which is the greatest menace to the future of our country, would, in our opinion, be greatly accentuated by government ownership."

Your Job's in Danger

By HERBERT KAUFMAN

Hearts win when spades are trumps. Society always gets a new shuffle in hard times.

Prosperity develops one set of men and adversity produces another type of leader.

Necessity frequently succeeds where ambition has failed. Ability is often buried deep in content and indifference. A blow in the face has more than once stirred a good-natured, easy-going lazer into a realization of his real strength.

There are those who walk about with a chip on the shoulder, daring opportunity to the issue, but some men have no conception of their sagacity or tenacity until circumstance edges them into a corner and lands a wallop.

A colossal accident has disrupted the well laid plans of commerce. When a continent spews its hates, the whole universe must pay the fiddler. Billions of dollars' worth of trade has been entirely stopped, heavily reduced or temporarily checked.

In a few lines manufacturers and producers are staggering under an influx of orders beyond their immediate capacity. They haven't machines enough, nor can they train workers sufficiently fast to cope adequately with their abnormal luck. On the other hand, the average concern can't estimate the probabilities of the immediate future.

Nobody knows when Europe will recover her sanity, and until there is some definite assurance of peace, makers, buyers, and sellers in all sorts of merchandise are hedging, conserving their capital, reducing their forces and limiting output and stock.

It's a ticklish moment for the inefficient. There's a candidate out on the street planning to displace you. He is not an incompetent who couldn't make good at his old job, but a first class, well trained, eager, intelligent expert who has had the ground cut from under his feet and is thinking harder today than ever before in his experience.

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The Telephone A Feature of Soda Fountain Service

Novel but Practical Utilization of Telephone in Speeding Up Service to Table Patrons of Confectionery Stores in Minneapolis and St. Paul—Refreshments Ordered by Number Over Telephone from Soda Fountain—The One-Minute Telephone Method

By Stanley R. Edwards

Intercommunicating telephone systems and private branch exchange systems have been used for many purposes, but it remained for a St. Paul and Minneapolis confectioner to devise an entirely new use for such systems. J. George Smith operates what he designates as the Smith patent telephone soda fountain in his two stores located in the Twin Cities. In each of the two establishments are between 50 and 60 tables for serving patrons with a variety of ice cream sundaes and sodas. Light lunches including sandwiches, bouillons, salads and hot drinks, are also served. Upon each table is located a desk telephone, which has a direct line to a small switchboard located at the center of the soda fountain counter. A patron coming into the store, seats himself at a table and decides upon his particular refreshment; the telephone is then used to transmit the order to the soda fountain. The operator at the fountain receives the order which is designated on the menu by number and shortly thereafter the patron is served with the refreshment desired. This, in brief, explains the system.

Mr. Smith first started this novel telephone system about 20 years ago in St. Paul. There were then only ten tables equipped with telephone instruments and this has since been increased to between 50 and 60 in the St. Paul store. The plan of taking orders by telephone worked so well that when the soda fountain establishment was opened in Minneapolis, about two and a half years ago, the tables were also equipped for ordering by telephone. Since that time the capacity of the store has almost been doubled.

The arrangements for taking care of the customers in a rapid and efficient manner is clearly shown in the accompanying illustration. The telephone idea is further emphasized in the menu, a section of the cover being shown in another illustration.

The Table Equipment in One of Smith's Telephone Soda Fountain Stores, in the Twin Cities.

But the use of the telephone does not end here. Each table is numbered by a placard prominently displayed upon the candlestick. Incidentally, it might be stated that an artistic lighting effect is obtained at each table by the use of an electric candle. This candle, as is shown in the illustration, is really an extension of the desk stand, a piece of tubing, joined at the top of the standard, sustaining the candle which terminates in an electric light covered by an artistic shade. The number, attached to the desk stand, or table, corresponds to the number of the line jack on the switchboard. A person seated at one table, recognizing a friend at another table, can obtain telephonic communication with that person through the switchboard. Frequently, a patron will desire to make an outside call and this can be done without leaving the table.

The menu is in the shape of a small booklet with the various items listed somewhat similarly to the names in a telephone directory. The number which is assigned to each item is placed first, then the name and then the price. The patron orders by number and his order is quickly forthcoming. In the menu, the following reference is made to the telephone system.

"Exquisite Soda Service."
J. George Smith.
Patent Telephone System.

This is our exclusive idea and has made our One Minute Telephone Method world-famous. The adoption of this system gives prompt and efficient service on our most delicious Sodas, Sundaes, Melbas, Happy Thoughts, and the enumerable other tempting and delicious delicacies served at this most modern and sanitary soda fountain.

A feature of the menu booklet is a miniature paper reproduction of a table, chairs and telephone equipment. This

miniature table folds up in the center of the book and opens out when the menu is opened. Thus attention is directed in an effective manner to the store's telephonic ordering system.

Considerable attention is paid to window displays in both stores and the telephone frequently figures prominently in

Section of Menu Cover Featuring the Telephone.

them. Several months ago, a feature of the window exhibit was a collection of old type telephones including the first telephone used in the Twin Cities.

From the illustration it can be seen that Smith's is a most attractive place and that the well planned illumination adds greatly to its inviting appearance. The store is not open all the evening. After closing, the window lights provide the only illumination apparent to the passerby. However people of the Twin Cities desiring to show their friends the interior of these stores, including the telephone soda fountain, are enabled to flood the stores with light by simply pressing a button. This is located outside and to one side of the window. The illumination remains on only while the button is depressed. Precautions are taken that it cannot be locked in operative position by persons mischieviously inclined.

The switchboard, located at the soda fountain, not only provides for service to and between the tables but also furnishes outside connections for the table telephones and the store's regular business telephones. In addition to this private branch exchange system, there is a separate intercommunicating system providing for communication with every part of the establishments but having no outside connections.

Aside from its novelty and its advertising value, this telephone soda fountain system is of practical value. Its utility has been fully proven by years of use. It has been a factor in making "Smith's of Twin City" remembered by all visitors to Minneapolis and St. Paul.

Indeterminate Franchise Permit Recommended in Missouri.

In its annual report to the general assembly, through Governor Major, the Missouri Public Service Commission has recommended that the public service commission law be amended by adding thereto what is known as the indeterminate permit law, similar to the one now in force in Wisconsin, relating to gas corporations, electrical corporations, water corporations and heating companies.

The commission further recommends the submission of a constitutional amendment providing that all appeals from orders and decision of the public service commission shall go direct to the supreme court, and providing the procedure of such appeals in such court. Such a constitutional amendment has been prepared and will be submitted to the legislature for its consideration.

The report shows that complaints against rules and practices of the telephone companies comprise nearly half the total number of cases filed, indicating the necessity that the telephone companies of the state should counsel together more freely to establish uniform rules of practice for general application. Efficient and equitable telephone standards should be determined upon and applied alike by all companies.

Illinois Independent Telephone Convention Program.

The tenth annual convention of the Illinois Independent Telephone Association, to be held next week, February 16, 17 and 18, at the Leland Hotel, Springfield, Ill., promises to be a big convention. Every room on the third floor of the Leland Hotel has been reserved by manufacturers and supply dealers for exhibits—about 30 in number. An interesting program, including talks on various topics of interest to every telephone man, has been provided.

The program, in full, is as follows:

TUESDAY, 10 A. M.

Operators' School of Instruction: Lead by W. S. Vivian, secretary of the Independent Telephone Association of America, Chicago, and Miss K. M. Gang, traveling chief operator for the Iowa Independent Telephone Association.

Wire-Chief's Conference: Lead by Arthur Bessey Smith, of the Automatic Electric Co., Chicago.

TUESDAY, 1:30 P. M.

Address of Welcome: Mayor Schepp of Springfield.

Response: President James W. Barrett, Pekin, Ill.

Conference and question box on Utility Accounting: Lead by M. J. Murphy, chief clerk of the Illinois Public Utilities Commission.

"Transmission," H. D. Currier, of the Kellogg Switchboard & Supply Co., Chicago.

WEDNESDAY, 9:30 A. M.

Secretary's report, B. F. Baker, LeRoy, Ill.

Address: Hon. Richard Yates, Springfield.

"The Independent Telephone Companies' Relation to the Bell Telephone Company," C. Y. McVey, Cleveland, Ohio, president of the National Independent Telephone Association.

"Telephone Accounting," John W. Coffey, Indianapolis, Ind.

Report of credentials committee.

WEDNESDAY, 1:30 P. M.

"Telephone Appraisals," Frank L. Beam, Mt. Vernon, Ohio, president of the Ohio Independent Telephone Association.

"Yesterday, Today and Tomorrow," Hon. O. F. Berry, Carthage, Ill., former chairman of the Illinois Railroad Warehouse Commission.

"Efficiency," Miss T. Anne Barnes, Bloomington, Ill.

WEDNESDAY, 7:30 P. M.

Banquet.

THURSDAY, 9:30 A. M.

"An Idea," Manford Savage, Champaign, Ill.

"Accounting and the Relations of the Telephone Industry to the Public," J. W. VanSant, Washington, D. C., examiner of the Interstate Commerce Commission.

"Home Study and Its Relation to the Telephone Business," S. R. Edwards, technical editor of TELEPHONY, Chicago.

General Discussion and Interpretation of Commission Law and Regulations, lead by Ben B. Boynton, Springfield, Ill.

THURSDAY, 1:30 P. M.

"Operating Efficiency," W. S. Vivian, Chicago.

"Efficiency in the Operation of Telephone Plant," Arthur Bessey Smith.

"Experiences of a Traveling Chief Operator," Miss K. M. Gang.

Report of committees.

Election of officers.

Adjournment.

Interference of Transmission Lines from a Legal Viewpoint

An Analysis of the Respective Rights of Various Utilities in Public Highways with Reference to Damage Caused by Induction and Conduction—Important Legal Decisions—Paper Read at Convention of the Iowa Independent Telephone Association

By Harold L. Beyer

Because of the rapid development and use of electricity to meet the manifold needs of our present complex life, and of the further fact that currents of different degrees of intensity are required for the various purposes served, it was inevitable that numerous construction and operation problems should arise, due to interferences of one current with another, and that out of them disputes, and even litigation, should grow. Fortunately, the spirit of co-operation and fair play has generally prevailed amongst the various utility companies, with the result that mutual rights have been respected and safeguarded in the vast majority of cases.

Induction and the Iowa Law.

Telephone and telegraph wires, owing to the low current required for the transmission of messages, have always been sensitively subject to the evil results of induction and conduction and from contact with nearby wires carrying currents of high voltage. Obviously the public needs electricity for light, power and transportation as much as it requires the conveniences of the telephone and telegraph. It can not get along without any of them. Moreover, the electric light and power company, the electric railway company, the telegraph company and the telephone company are interdependent. Each, at times, must make use of the facilities afforded by the others.

It therefore follows that anything which affects the well being and successful operation of one public utility immediately affects the others. The rights of all can be and are being, protected by engineering foresight, as well as by legislation, the railroad and utility commission and the courts. The growth of power transmission companies has been very rapid in recent years and has called forth much special legislation.

A brief consideration of the Iowa statutory provisions with reference to electric wires is first in order. Section 2158 of the code authorizes the construction of telephone and telegraph lines, with the necessary fixtures therefor, along the public roads of the state or across rivers or over any land belonging to the state or any private individual. Construing this section, our supreme court has held that the term "Public Highways" as used, includes city streets. (Chamberlain vs. Iowa Telephone Co., 119 Iowa, 619). Section 2159 provides as follows:

> Such fixtures shall not be so constructed as to incommode the public in the use of any road or the navigation of any stream; nor shall they be set up on the private grounds of any individual without paying him a just equivalent for the damage he thereby sustains.

General supervision over "all wires for transmitting electric current or any other wire whatsoever crossing under or over any track of a railroad in this state" is placed in the board of railroad commissioners. The board is also vested with authority to secure information as to all such wire crossings and to order such changes as it may deem necessary in order to make the same comply with the rules and regulations which have been prescribed by the commissioners. (Code Supp. Sec. 2120-d-2120-j). Cities and towns are authorized by code, section 775, to regulate the poles and wires of telephone, telegraph, street railway, electric light and other electric companies.

A possible source of confusion and conflict results from the fact that we have laws on our Iowa statute books vesting the control of electric transmission lines in the board of supervisors of every county in the state and also in the board of railroad commissioners. Chapter 94 of the laws of the 33d General Assembly authorizes boards of supervisors to grant the use of the public highways for the erection and maintenance of poles and wires for the transmission of electricity and fixes the liability for damages arising from the construction thereof.

Application in writing is made to the board designating the particular highways on which it is desired to erect the lines to conduct electricity for lighting, heating and power. purposes. Grants not to exceed 20 years may be made after notice of the hearing of the application shall have been "published once each week for two consecutive weeks in a newspaper printed and published in the county seat, and of general circulation in such county, stating the time when such application will be acted upon and designating the particular highways named in such application."

All such grants are made on the express condition that the grantee shall not have an exclusive right to use the highway for conducting electricity; that the poles and fixtures shall be constructed so as not to "incommode the public in the use of any road or the navigation of any stream"; that if a road along which such lines have been constructed is changed, the owner of such line shall, on 90 days' notice in writing, remove such line to the road as established; that "only strong and proper wires, properly insulated, attached to strong and efficient supports and insulated at all points of attachment" shall be used; that all wires, as soon as they become unsafe through ordinary wear, shall be replaced with new wires, and that all wires the use of which is abandoned, shall be taken down; that "every wire carrying electric light, heat or power currents where it enters a building and within such building, so as to avoid danger from fires," shall be properly insulated; that "where such wires are carried across or under wires used for other service, there shall be suspended under or over said power, heating or light service lines, properly constructed, and insulated guard nets, or shall be protected by such other equally efficient devices as will prevent contact with such other service lines in case of sagging or breaking of such wires"; and that the owners of such lines "shall be responsible for all damages that may arise from such construction and operation under this grant or from a failure to comply with said provisions."

Provisions of Iowa Statute.

At the last session of our legislature a law was passed (Chapter 174 of the laws of the 35th General Assembly), which confers power upon the railroad commission to grant franchises to individuals and corporations organized under the laws of Iowa, or authorized to transact business in Iowa, to engage in the manufacture, sale or distribution for sale of electric current, to construct transmission lines and obtain the necessary interests in real estate therefor, and prescribes the manner of making compensation to the owners of the land for such rights. No reference in this law is made to Chapter 94 of the laws of the 33d General

Assembly conferring authority on the boards of supervisors in these matters. Whether the earlier law is to be deemed as repealed by implication, will not be known until our supreme court has passed upon the question. It may be worth while to analyze the new law somewhat carefully.

Section 1 deals with the subject of franchises. Franchises may be granted enabling the grantee "within the state, except in cities and towns, to erect, use and maintain poles, wires, guy wires, towers, fixtures and other necessary construction for the purpose of conducting electricity for lighting, power and heating purposes over, along and across any public land, highways or streams or the lands of any person or persons, and to acquire the necessary interest in real estate therefor."

The applicant for such a franchise must file with the commissioners a petition in writing, setting forth "the manner, methods and specifications for the construction of such line, together with a general description of the public lands, highways, streams or private lands over which it is desired that said transmission line be constructed, together with a map showing the starting point, route and terminus of said proposed line."

Time for a hearing upon such petition is then fixed by the commission and at least ten days' notice thereof given by publication, "in the official newspapers of each county into or through which said proposed line extends," such notice being addressed to the citizens of the county and containing "a statement as to the purpose of the petition, a description of the lands to be traversed by the transmission line and the date and place" of the hearing. Objections in writing to the proposed line, either as to its establishment or location, may be filed with the commission and must be given due consideration. The commission is authorized to examine the proposed route and may grant the application as made or may modify as it may see fit and grant the franchise as so modified.

The privilege granted by the commission shall be and constitute a franchise to operate and maintain the proposed transmission line, but all rights granted by said franchise shall be subject to the provisions of this act and also such regulations as the legislature may, from time to time, prescribe, either by direct legislative enactment or by and through the railroad commission, under the laws of Iowa, now or hereafter in force.

Section 2 authorizes the commission to grant authority to persons or corporations operating transmission lines to acquire additional rights under this act. The procedure is the same as upon the original petition, but before acting upon it the applicant must "file its consent that the provisions of this act and of all acts or laws relating to public utilities which are now in force, or which may be hereafter enacted, shall apply to its existing line or lines with the same force and effect as though said line or lines had been constructed under a permit provided for in Section 1."

Section 3 provides that any transmission line which secures a franchise under this act shall be held conclusively to have accepted the provisions of this act and of all laws relating to public utilities, their regulation, supervision and control, now or hereafter in force and "to such reasonable regulation as the commission may, from time to time, prescribe."

Section 4 vests in the grantee of a franchise under this act "the right of eminent domain to such extent as may be necessary and as prescribed and approved by the commission, 'not exceeding 25 feet in width.'" The proceedings for taking private property for transmission lines are the same as where such property is taken for works of internal improvement. (See Code, Title IX, Chapter 4, and amendments thereto).

Section 5 vests in the railroad commission power of supervision over the construction, operation and maintenance of transmission lines, and provides as follows:

The railroad commission shall have power of supervision over the construction of said transmission line and over its future operation and maintenance, and said transmission line shall be constructed near and parallel to the right of way of the railways of the state or along the division lines of the lands, according to the government survey thereof, wherever the same is practicable and reasonable, and so as not to interfere with the use by the public of the highways or streams of the state, nor unnecessarily interfere with the use of any lands by the occupant thereof, and shall be built of strong and proper wires attached to strong and sufficient supports properly insulated at all proper points of attachments; all wires, poles and other devices which by ordinary wear or other causes are no longer safe shall be removed and replaced by new wires, poles or other devices, as the case may be, and all abandoned wires, poles or other devices shall be at once removed.

Note how similar the foregoing provision is to the laws of the 33rd General Assembly relating to control by boards of supervisors. This might indicate that the legislature meant the new law to supersede the old and to place these important matters in the hands of one governing body.

Where wires carrying currents are carried across, either above or below wires used for other service, the said transmission line shall be constructed in such manner as to eliminate, so far as practicable, damages to persons or property by reason of said crossing; there shall also be installed sufficient devices to automatically shut off electric current through said transmission line whenever connection is made whereby current is transmitted from the wires of said transmission line to the ground, and there shall also be provided a safe and modern improved device for the protection of said line against lightning.

No transmission line shall be constructed, except by agreement, within 100 feet of any dwelling house or other building, except where said line crosses or passes along a public highway or is located along side or parallel with the right of way of any railway company.

At any crossing of any highway by said transmission lines, the poles or towers next to the highway shall be labeled with the following words:

Danger .....
..... volts
Electricity.

The stroke of said letters and numbers shall be at least four inches in length and not less than five-eighths of an inch in width, and the color of the letters and numbers shall be in contrast with the color of the background. The said labels shall show the maximum number of volts of electricity transmitted over said line, and said label shall face toward the highway.

Where said poles or towers are extended along said highway and within the limits thereof or immediately adjacent thereto, the sign hereinbefore described shall be placed at least every quarter of a mile.

The commission shall have full power and authority to add such further and additional rules and regulations as regards location, construction, operation and maintenance of said transmission line as may be reasonable.

Section 6 provides that when injury to person or property is caused by any transmission line operating under this act "negligence will be presumed on the part of the person or corporation operating said line in causing said injury, but this presumption may be rebutted by proof, but no change in the rule of the burden of proof shall exist in favor of employes of the person or corporation operating said transmission line who are charged with or engaged in the construction, reconstruction, repair or maintenance thereof."

Section 7 regulates the adjustment of damages caused in the course of construction and maintenance and provides that damages to land or crops caused by entering, using and occupying such lands for the construction of transmission lines, and repairing same, shall be paid annually at the end of each season, in the county where caused, to

the owners of the land except in cases where agreements are entered into with said owners by the transmission line companies.

So much for the rights and powers of transmission companies under our laws. It is a fact that a number of such lines are under construction, and some of them are ready to operate at the present time in different parts of Iowa. Some litigation is now pending as a result of actual or threatened interference. In the district court of Mills County in the case of Mills County Telephone Co., and Iowa Telephone Co. vs. Central Station Engineering Co., et al., the complainant was granted a temporary injunction restraining the defendant from sending current over its high tension lines until certain changes in construction had been made. Access has been had only to the decree which was entered in this case in open court upon consent of the parties and nothing is known of the surrounding circumstances. Since this was a consent decree, its authority as a precedent in this state is not of the greatest value.

It may be of interest to note some of the findings and orders in this case. The court found that the plaintiffs were the prior and lawful occupants of the highways in the city of Glenwood, in the towns of Mineola and Silver City and in the country highways of Mills county, and that they were entitled to use and enjoy their telephone lines in such highways free from substantial interference by and danger from the high tension electric light and power lines erected by defendants, who had lately constructed their lines in the highways and which the court found did interfere with and endanger the telephone lines of the plaintiffs and the patrons thereof.

The defendants were ordered to make numerous changes within 30 days. It appeared that the defendants had built their high tension lines above and parallel to the telephone lines of the plaintiffs in several places. The court ordered the transmission line company to remove telephone poles of the plaintiffs to the opposite side of the road at all such points, and to install same in a workmanlike manner under the supervision of an agent of the plaintiffs, communication on the telephone lines not to be interrupted by said removal, the cost of supervision alone to be borne by the plaintiffs. At all points where the plaintiffs' and defendants' lines crossed, the court ordered that there be a vertical clearance of the power lines over the telephone lines of not less than eight feet; that at all crossings the high tension lines be placed above the telephone lines; also that numerous other construction specifications be complied with which we need not here consider in detail. A decree in this suit was entered May 1, 1912.

An application for temporary injunction made in the Mahaska County district court by the Oskaloosa Home Telephone Co. vs. Oskaloosa Traction & Light Co., was denied recently, the defendant having filed an answer denying the allegations of the petition and being a solvent corporation. If the defendant company had been insolvent or not able to respond in damages it is believed that an injunction would have been granted. A suit for damages between the same companies is now pending, as are also two injunction suits against the same company brought by the New Sharon Public Utility Co. and the Interior Telephone Co., of Grinnell.

As yet, no cases involving the interference of transmission lines with telephone companies has been adjudicated by the Iowa supreme court.

Standard Specifications for Overhead Crossings.

Recognizing the necessity for standardizing construction practice for overhead crossings for electric light and power lines, a joint committee of the National Electric Light Association, the American Institute of Electrical Engineers, the American Electric Railway Association, the Association of Railway Telegraph Superintendents and the American Railway Engineering and Maintenance of Way Association, has formulated a set of specifications, which will undoubtedly meet with general approval and adoption. With slight modifications they were adopted by an order of the California Public Utilities Commission entered December 1, 1912, for all lines transmitting a current of 15,000 volts and higher voltage.

In December, 1912, the California commission authorized a committee of 15 engineers, representing the wire interests of California, to investigate the subject of inductive interference between power and communication lines and to make recommendations for commission rulings intended to prevent undue interference. The committee has been steadily at work and reported in September, 1913, the progress made up to that time. A field force of from five to eight experimenters and computers was employed and equipped with laboratories and a large amount of apparatus, including oscillograph having three vibrators, noise standards, and impedance bridge, complete equipment for harmonic analyses, and instruments of various kinds, some of it especially designed for the work, representing an outlay of about $9,000, the funds having been voluntarily contributed by the power and communication interests of the state.

Results of California Investigation.

It has been found difficult to draft general remedial measures, but it hopes ultimately to formulate such specifications as will standardize construction and operations, and reduce to a minimum interruptions of service. The members of the committee feel that this will enable the railroad commission to make rulings that for the future will reduce harmful agitation, legislation and litigation. Such work as this shows a practical way of dealing with this vastly important subject, and we in Iowa ought either to have the work of the California committee adopted here by the utility interests, or have a similar investigation made on our own account, perhaps in connection with the engineering department of the Iowa State College at Ames. At the same time we should set to work to have our laws amended, taking away from boards of supervisors and vesting in our railroad commission control of all transmission lines operating in Iowa.

In the absence of authority in our own state, it may be not without interest and profit to examine as briefly as possible the law relating to this subject as it is found in text books and in reported cases in other jurisdictions. The law is thus summarized in 2 Joyce on Electric Law, 2 Ed., Sec. 517:

> Upon the question of interference by the electric wires of one company with the wires of another electrical company, the following general rule may be stated, being clearly sustained by the weight of authority. As between different electrical companies, prior authority to one of the companies to occupy, or prior occupation of the streets, will not confer upon such company an exclusive right. The right of the prior licensee, however, must not be substantially injured by the late company. Such subsequent licensee is under the duty to so maintain its wires and lines as not to interfere with the right of a prior occupant of the streets to properly maintain and operate its lines and to transact the business it is authorized by its franchise to transact.

The following statement is found in 6 Pomeroy's Equity Jurisprudence, Sec. 635:

> In the cases which have arisen, neither party has been entitled to an exclusive right. Both have had authority to use the street. As a matter of law, it is held that "Where a person is making lawful use of his own property or of a public franchise, in such a manner as to cause injury to another, the question of his liability will depend upon the fact whether he has made use of the means which,

in the progress of science and improvements, have been shown by experience to be the best," hence it is held that a street railway company will not be enjoined from maintaining a trolley wire in the center of the street merely because the grounding of the wire causes a current in telephone wires by conduction. Where, however, wires are strung so close to others as to cause induction which might be prevented by placing the wires at a greater distance, a right is infringed and an injunction is a proper remedy. The ground of the jurisdiction has been said to be that defendant's conduct "is an unwarranted usurpation amounting to a trespass on plaintiff's rights which is recurrent, continuous and tending to a multiplicity of suits."

In Paris Electric Light & Railway Co. vs. Southwestern Tel. & Tel. Co. (Tex. Civ. Ap.) 27 S. W. 902, 5 Am. Elect. Cas. 262, April 19, 1894, the telephone company was seeking to enjoin the light company from maintaining its wires nearer than four feet to those of the telephone company. The injunction was granted. The telephone company held a prior franchise and had operated its lines several years before the light company secured its franchise. The court found, among other conclusions of fact, "that said wires were strung nearer than four feet, which created danger of wires and of injury to persons and danger to human life. . . . There is space sufficient along said streets for appellant (the light company) to string its wires not nearer than four feet to those of appellee, and carry on its business and render efficient service to its customers."

The court took the position that as the telephone company's franchise was superior in point of time to that of the light company, and had been acted upon, the subsequent licensee could not interfere with the use and enjoyment of the older right by placing its wires in such close proximity to those of the telephone company as to impair the efficiency of the latter's telephone service.

Under a similar state of facts, in Bell Telephone Co. vs. Belleville Electric Light Co., 12 Ont. 571, 2 Am. Elect. Cas. 330, 1886, the electric light company had placed its wires on the same side of the street and only two feet above the telephone wires, where it was claimed there was great danger of the electric light wires breaking and falling upon the telephone wires, diverting the strong current of the light company to the telephone wires, producing fire at the end of the telephone wires, destroying the telephone instruments and injuring the buildings in which they were contained, and an injunction was allowed.

A Well Established Principle.

The court recognized the well established principle that prior use by the telephone company did not give it exclusive possession or right to the use of the side of the road on which it had placed its poles, but being on the ground it had the right to be protected against any interference or act to its injury. It was further held that there was danger in the position of the wires, that the defendants were wrongdoers and they were ordered to transfer their wires to the other side of the street.

It appears that if the company complained of its violating a municipal ordinance or the terms of its franchise and in general acts in an arbitrary and unreasonable manner, an injunction will lie at the suit of a telephone company against a transmission company to compel the offending company to comply with the ordinance provisions. (See Birmingham Traction Co. vs. Southern Bell Telephone Co., Alabama Supreme Court, October 28, 1898, 7 Am. Elect. Cas. 405.) In this case the telephone company had operated its system in Birmingham ten years prior to the suit, at which time the traction company was making the necessary mechanical changes to substitute electricity for steam power on its street railways. The construction of the trolley wires was faulty in that the wires in some instances touched the telephone company's wires and the defects were called to the defendant's attention.

The defendant's manager not only refused to correct the defects, but stated that if the telephone company did not make the necessary changes itself, the defendant would tear up the complainant's wires and poles. The local ordinance required companies running electric light, power or trolley wires under telephone, fire alarm and telephone wires to secure permission so to do and to pay the expense of raising the wires if unlawfully constructed; it also required guard wires to be installed by the person or company making the last construction. The court held that equity would interfere to control corporations such as these and to keep them within the line of their authority and subject to law.

The earliest case on this subject was that of Western Union Telegraph Co. vs. Champlain Electric Light Co., Clark County Common Pleas, November 12, 1885, 1 Am. Elect. Cas. 922, in which a temporary injunction was allowed at the suit of the telegraph company against the light company restraining the latter which held the later franchise from stringing its wires so as to injure the telegraph company. The court found that placing the electric light wires at the ends of nine foot cross arms on poles at that distance below the telegraph wires would not endanger the plaintiff's linemen if they used proper care in ascending the poles.

A Case at St. Louis.

In Western Union Telegraph Co. vs. Guernsey & Scudder Electric Light Co., 40 Mo. Ap. 120 (1891), 3 Am. Elect. Cas. 425, the plaintiff had its telegraph lines in the streets of St. Louis which had been in use four years when the defendant light company constructed a lead of poles higher than plaintiff's poles and placed its wires partly above and partly below plaintiff's telegraph wires, using same to transmit heavy electrical currents. A restraining order was entered enjoining the defendant from transmitting any electric currents through its wires strung below those of plaintiff on account of the danger to plaintiff's employes and prohibiting the defendant from stringing any more wires below the wires of plaintiff; also from placing any electric light wires above those of plaintiff nearer than three feet to plaintiff's wires; also requiring the defendant to place some network below its wires already strung sufficient to prevent its wires in case of breakage or sagging, from coming in contact with plaintiff's wires.

At the final hearing, the restraint as to the lower wires of defendant was removed on the ground that such wires were only there for temporary purposes. The rest of the injunction was modified by enlarging the space which was to intervene between plaintiff's and defendant's wires from three to eight feet, and as thus modified was made perpetual. The court was of the opinion that the plaintiff's rights and duties as a common carrier under national and state laws, had a material bearing in determining the question as to what interference was substantial enough to warrant the interposition of a court of equity, so, at page 439, the court said:

> It is in this connection that the plaintiff's rights and duties as fixed by law are material. The plaintiff is a carrier in the service of the public, and its duties as such are regulated by law and enforced by the severest penalties. It is answerable in its penalties for any neglect in the safety and accurate transmission of messages intrusted to its care. . . . The plaintiff, therefore, has a right to insist that a rigid protection of the law should be thrown around the instrumentalities which are essential to the faithful performance of its duties. The defendant is a mere volunteer. It makes whatever contracts it pleases with customers of its own selection and even in cases of breach is answerable for ordinary damages only.

(To be Concluded)

"Telephony's" Home Study Course for Telephone Men

A Complete Presentation of the Principles Underlying Modern Telephony in All Its Branches—Arranged Systematically So That Regular Reading and Faithful Study Will Qualify Ambitious Men for Higher Positions—Prepared Under Supervision of Stanley R. Edwards—This Section Written by Paul Hamilton

Quiz Questions on the Preceding Installment.

The answer to these questions will be found in the reading section bearing the same number. Answers are not to be sent to TELEPHONY for criticism.

30. What are the known methods of accumulating electricity?

31. Which method of accumulating electricity is impracticable in telephony and why?

32. What is the general term used to denote the apparatus and elements utilized in producing electricity by chemical means?

33. What are the three initiative forces employed in generating electricity by mechanical means?

34. What is meant by an "electrical field"? To what other field of radiation does it compare? Under what conditions is the field intensified? Under what condition does the opposite result take place?

35. What is "polarity"?

36. Why are special units of value required in electrical measurements?

Elements of Electricity (Continued).

37. *Energy and power.* Power is the result of the application of force or energy. In no instance, however, can power be secured without motion, and motion is the effect of applied energy. This may appear to be reasoning in a circle. Let us then follow farther along the line. Released energy causes motion, and from motion, power to accomplish work results. One may possess the muscular ability, or energy to raise a 50-pound weight above the head with either hand, but there must be movements of the muscles to accomplish it. A more mechanical illustration is shown in Fig. 8. Here we have a tank filled with water, from near the bottom of which a conducting pipe with a stop valve projects. The water stands in continuous state of pressure. It exhibits a constant and permanent desire to exert its strength. While the valve remains closed, there is no manifestation of power. Energy there is, but it is held in bondage in the tank. Theoretically it may remain there undisturbed an interminable length of time. The store of energy will not be exhausted in the least, but no power is developed.

By opening the valve, the water is released and set in motion. The water now in motion strikes against the cups on the wheel and its weight causes the wheel to move, thus exerting control over it. In turn, the waterwheel in motion exerts an influence over the wheel to which it is represented as being mechanically connected by means of a belt and pulleys. When the apparatus represented was at rest, there was no manifestation of power because of the lack of the requisite motion. When the water is released from the tank, a uniform motion is set up and the ability to perform, or accomplish an object, called work, is termed power.

Presuming the water wheel is removed and the flow of water does not come into contact with the cups, there is no

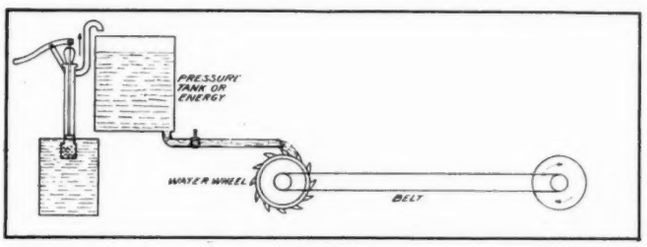


Fig. 8. The Conversion of Energy to Power.

actual manifestation of power. Energy is expended, but is misapplied or not applied at all. The whole theory of physics is based upon the principles of expending energy to produce motion from which power is derived.

Referring again to Fig. 8, we will assume there are a certain number of units of energy accumulated by the storage of the water. This energy must have been accumulated by the expending of energy, in this case in the form of a pump. The operation of filling the tank signifies motion, which, as stated, is a result of expending energy. The motion provided power by which a certain proportion of the energy first applied was accumulated in the tank. The exertion of power was momentary and ceased the instant the producing motion ceased. The energy accumulated or stored in the tank, or otherwise, for future use, is called potential energy.

The energy stored in the tank is or can be measured, and the unit is the number of pounds pressure exerted per square inch of surface to which it is applied. In this case the greatest pressure would be exerted at the bottom of the tank, it being equal throughout that surface. Against the sides of the tank, the pressure would decrease proportionately from the bottom toward the top. The outlet pipe, being connected at the bottom receives the highest degree of pressure exerted.

38. *The volt and voltage.* In relation to electricity a very similar condition is observed. There exists a potential energy which is transformed into motion, and from it power for performance is derived. The unit of energy exerted by electrical pressure is called a volt. From this word, voltage is derived. The word "volt" was derived from Volta, the discoverer of the existence of the principle.

While the electrical theory does not correspond exactly with the theory outlined in Fig. 8, there are appreciable similarities.

The rapidity or intensity of the motion resultant from the release of the water, or electricity, is not entirely dependent upon the pounds pressure per inch in the tank or on the voltage of the electrical supply. Other elements enter into the equation as will be shown, later. It is desired to fix in the reader's mind the difference between energy and power; and

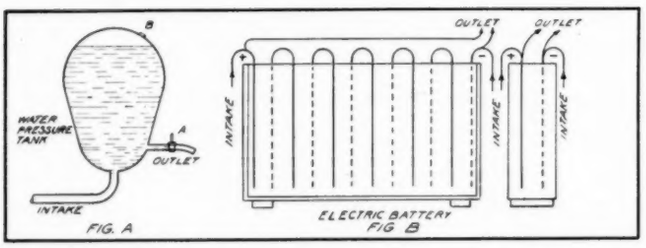


Fig. 9. Dissimilarity of Pressure per Square Inch and Voltage.

the fact that pounds pressure per square inch, is as nearly synonymous with voltage as any unit of measurement known in common usage, and with which all are generally familiar.

One great dissimilarity will be considered here, others will be realized as various applications of the principles are developed. In Fig. 9-*A* is shown an closed tank with an intake and an outlet. In Fig. 8, the potential energy consisted of the attraction of gravitation on the water in the tank. In Fig. 9-*A*, it is possible to apply a driving force or pressure to the intake and cause a compression against the sides of the tank of any amount desired, in accordance with the driving force applied. In this case, the pounds pressure per square inch can be increased to the limit of the retaining strength of the walls, regardless of the containing space within the tank. Other conditions regulate the size of the tank required for a certain purpose.

In Fig. 9-*B*, two electric batteries, or rather cells, are represented. They likewise have intakes and outlets. One is represented as being six times larger than the other. It would appear that the larger battery would respond with a much greater voltage or pressure than the smaller. But this is decidedly not the case. Whatever amount of energy may be applied to accumulate the potential energy within the cells, either will only respond to an average voltage or pressure of 2.2 volts. Whether the battery is made in a thimble or a cask, the maximum voltage with which each will respond, will be approximately the same. Thus in the case of increasing the voltage of electrical energy from storage or an accumulation, the requisite number of vessels or containers must be connected so that the product of the number of containers multiplied by 2.2 will be the desired voltage. As the size of the containers does not enter into the theory of voltage, it will be explained in its normal and rightful place.

As we have explained that the primary function of voltage, or the direct result from its exertion, is motion, it is frequently denominated emf., an abbreviation of the words, "electromotive force." This is exceedingly expressive if the theory is thoroughly understood. It signifies clearly the ability to produce motion, the basic principle of accomplishment of a purpose, or work.

39. *The ampere.* The word "ampere" is historical, being the name of the man who, by his experiments, established the fact that electricity could be given a definite consideration as to quantity, which was unmeasurable by any known method before his time. It is the unit of quantity or volume by which electric quantity or volume is measured. Just how it is determined, will be explained later. While without pressure or voltage, there would be no current or flow of electricity over a circuit, without volume or amperage, the requisite motion to provide power would be lacking.

Under its own peculiar conditions, the flow of current is very similar to the flow of water as illustrated in Fig. 8. The wheel is turned in proportion to the number of gallons of water which pass over it in a given or fixed period of time. This amount may be increased or decreased by varying the motive force or pressure at the source. This rule is applicable to electric current. The current, receiving its impulse to move from the emf., or voltage of the source, flows through a properly devised machine, setting it in motion. The degree of action set up by the machine is dependent upon the relation of the machine and the number of amperes of current brought to affect it during a certain period.

In the case of the waterwheel, we had a visible example of power applied by the water striking the cups of the wheel. In the case of an electric current passing through a machine, no visible application of force is manifest. Yet we realize that power is the result of the movement of the current. By observing the action of the machine under different conditions of current flow, it is plainly understood that the current flow has a direct relation to the machine action.

In the case of the waterwheel in Fig. 8, a few drops of water, no matter how great the pressure from the source, would not produce motion of the wheel. Thus volume is also a necessary requisite in the production of power.

It has likewise been determined that a small volume of electricity, under high voltage or pressure, will not accomplish or exert the same force as a larger volume.

It having been determined exactly what work a certain exertion of power would perform by the expenditure of energy, from various sources in exact known volume, a unit for calculation was determined. This is called the "horsepower." Horsepower is derived from the expenditure of energy or force against the force of gravity and measuring the result in pounds with relation to time and distance. The energy required to raise a weight of one pound, one foot, is termed a foot-pound, which shows the expenditure of energy. To determine the power unit, the elapsed time must be considered. James Watt determined that the average work of a horse was equivalent to raising a weight of one pound, 550 feet per second of time. Therefore it has been generally accepted as a fixed standard, that 550 foot pounds per second or 33,000 foot pounds per minute is one horsepower.

40. *The watt and kilowatt.* As the foot-pound unit would result in the use of fractional parts of the volt and ampere in electricity, Watt also determined the unit for use in calculating the power exerted by the application of electrical energy. By the application of one ampere of current, energized by one volt pressure, he determined that 1.356 horsepower resulted. Then if one horsepower is equivalent to 550 foot pounds per second, one watt would be equivalent to the product of 550 foot pounds multiplied by 1.356 or 746 foot pounds.

As the watt is a small unit, and power is used in much larger quantities in so many instances, it has become the accepted practice to calculate on the basis of what is called a kilowatt, which is equivalent to 1,000 watts.

Except in connection with providing the potential energy, lighting, etc., the unit of electric power has little consideration in telephony. The power required to operate the apparatus used is comparatively too small to be used as a basic factor. Many of the operations of relays, etc., require the exertion of power in an unappreciable quantity, so to speak.

41. *The ampere hour and kilowatt hour.* As has been stated, the amount of current and the power exerted is often too inappreciable to be made a prevailing factor in telephony. As reference has been made to the relation of elapsed time to the resultant effect of the expenditure of electrical energy, a brief explanation of these terms is justified. As one volt of pressure causing a flow of one ampere of current, produces one watt of power, this condition existing without variation for one hour would result in what is termed, one watt hour, or if prolonged 1,000 hours, the result would be one kilowatt hour.

If at the end of the hour's time, the source of supply were exhausted and current ceased to flow, the capacity, or contents of the container at the source, would be determined as one ampere-hour. In other words, the source would be considered as equivalent to one ampere-hour. Formulas for calculating the value of these terms can be more suitably explained in a later chapter when the theory of accumulators will be discussed.

42. *The ohm, the unit of resistance.* As has been explained, an electric current, when seeking a path or circuit, meets with continuous resistance. For instance, a copper wire of even dimensions and composition, offers an equal amount of opposition to the passage of current throughout its length—the first foot, no less or more than the last foot. In all substances, this resistance or opposition quality has relatively the same distribution. Like the conditions existing in the "Deacon's One Hoss Shay," one part is as strong as the rest in each separate conductor under an equality of conditions, such as composition, temperature, etc. It might be surmised at once by an ingenious mind that a unit of resistance could be fixed by an established length of some common substance; and in truth, this is exactly the means employed, or rather was the method employed by G. S. Ohm in fixing the unit of resistance which is now universally accepted.

It is obvious, that to follow such a method, requires the use of a substance in which variation of composition would be least liable. In most, if not all metals, hardened by process, slight variations prevail between the particles or atoms, even in short lengths. In the case of fluids, water for instance, the resistance is so low that in the amount required to secure a reasonable unit, the density would vary in different portions. Ohm therefore selected mercury as the medium upon which to base his calculations.

Mercury, known to us as quick-silver, has the peculiarity of condensing to the least degree from the force of gravity, of any known fluid substance. It is, however, very sensitive to changes in temperature. Like other substances, its resistance to the flow of current increases and decreases in accordance with its density. The temperature selected by the experimenter was what we commonly call the "freezing point," or 32 degrees above zero, Fahrenheit. Mercury does not congeal or freeze at that temperature, but this point of freezing refers to water, or fluids of which it is a component part.

The following was Ohm's determination: The unit of resistance is equal to one ampere of current flowing under a pressure of one volt through a column of mercury 0.03937 inches square, and 41.85 inches high. Ordinarily these measurements are given as one millimeter square by 1.063 meters high, which, reduced to inches, is equivalent to the dimensions first given.

Even now, with the information here given, we have nothing very tangible for practical use. It is found very inconvenient to carry a column of mercury as described, around with us for everyday use. Possibly Ohm made an error in fixing the exact form in arriving at his unit of resistance. It looks reasonable, perhaps, to conclude that he might have said "so many cubic inches of mercury" or "so many ounces of mercury." But he refrained from doing so, and perhaps there is a reason.

Let us presume that a wire, one hundred feet long, gives us a resistance of two ohms. The wire weighs two pounds. Now we have an easy problem. The result is one ohm per pound. Under this solution of the equation, we can take the same weight of metal as that of which the wire is composed, make it into a wire fifty feet long and presume that we have the same resistance. But this is not the true result. We will find our resistance has decreased, because of the fact that the cross-section of the wire has been increased. The wire shows a larger cross-section and offers a freer path for current. So the ohm per pound proposition will not hold.

Now to consider the foot measurement of the wire. We stated that we had one hundred feet of wire which offered two ohms' resistance. This would be fifty feet to the ohm. For experiment, we draw a wire out until it is two hundred feet in length without reducing the circumference. By measurement it is found that we have four ohms' resistance.

We have thus found that, if we increase the size of a conductor in cross-section without changing its length, we reduce the resistance. If we increase the length but make no change in the cross-section dimensions, we increase the resistance. The resistance is therefore affected inversely with regard to changes in the cross-sectional area, and directly relating to its length. The same volume of mercury in any other form, therefore, would not have given the same result as that Ohm decided upon.

43. *Resistance and its purposes.* The resistance of various metals commonly used in telephony are given in handbooks in the form of tables compiled from accurate calculations. These are made up with relation to standard cross-sectional areas and the resistance for a given number of inches or feet recorded. If, however, we have no tables at hand, and do not know the exact length or cross-sectional area of the conductor we wish to consider, an instrument has been devised for the purpose of measuring the resistance. Not only has an instrument been provided for this purpose but there are also other instruments for determining the various factors involved.

We have considered resistance, thus far, as an existing or natural quality of all substances, with the exception of a slight mention in connection with insulation. While resistance is not a quality of electricity, its application in connection with telephony is quite as essential as the presence of the current. Let it be understood as the quality by which not only the current but every adaptation of electricity is controlled. It is in reality the quality or condition which enables us to determine the presence of electricity. When the human senses fail to comprehend its presence, resistance, introduced into the path of the current, will determine it for us. Therefore the whole theory and practice in the application of this mysterious force is built around the quality of resistance, applied in varying and suitable forms. To transform electrical energy into power for performing the various functions in telephony, is primarily a study of the proper introduction and application of resistances to decrease or augment the flow of current. By this means we provide the motion necessary to perform the desired purpose economically.

If a man has a mill that requires the power generated by a two horsepower engine and operates it with a five horsepower engine, the waste is readily realized. The mill will either be ruined by the unnecessary power applied or power must be reduced by relays of additional friction gears or belts, and practically wasted. With a difference of one horsepower, the additional strain and consequent wear on the mill might not be noticeable, but it would prevail in spite of this.

In telephony, much the same principles apply. Many pieces of apparatus will operate under more than required pressure and current strength. It is only during later years that the lack of economy in the useless waste of energy has been realized. It is through the medium of resistance, introduced in the apparatus and into the circuits, that progress towards economical operation is being studiously brought about.

In many cases the power required is so small, comparatively, that to double and triple it, was not considered bad practice, for it was the most convenient method. But when the many applications of power were considered in the aggregate, the total waste formed a conceivable factor. Therefore the theories and principles heretofore outlined will prove of more and more value as the art progresses.

(To be Continued)

The Afterthought

Another Good Convention—A Fable

By J. C. Kelsey

It was a fine convention. Telephone men were there, eager to learn, anxious to see, seemingly with renewed interest in their business.

Surely the fiscal year has been a good convention year without exception.

An encouraging note was sounded by the interest in and the attendance at the technical sections. Both engineering and accounting received the fullest attention. People are studying.

Commissioners were there: one from Pennsylvania, one from Ohio and one from Kentucky—all of them live men—and there may have been others. Engineers were there, with international reputation.

Well may we declare that the telephone business has departed from the alleged hit or miss period of its early existence.

In the engineering section, there was great interest shown in unit values, depreciation, present value and intangible value. True to prediction, there was some extensive argument—some comment and intelligent criticism.

It seems that in all business, there is something besides physical value. Some call it going value; some have called it deficit, cost of ignorance, education and kindred terms.

Whatever it is—however it is expressed—the fact remains that there is something which costs the investor some money, and it should not be denied him.

As chairman of the engineering section, I modestly led off by reading a paper which I read at the Kansas convention. It was published in TELEPHONY of January 9, but very few seemed to recognize the story when I gave it a second time.

I am led to say right here, that the Bell interests read the current magazines more closely than do our people. Anyway the joke was either on me or on the engineers present.

I took the story of the master who invested five talents, two talents and one talent. He put one talent into the telephone business and went his way.

He is the helpless investor who was induced to put his money into the telephone business. He is the man who is least consulted of all. He is the one who makes the least disturbance because he is merely a group of masters. It is usually a case of whatever is everybody's business is nobody's business.

As I sat in that meeting and listened to Commissioner Doty I thought that Ohio had not made a mistake in such a man. As I saw Commissioner Klair, I knew that Kentucky had made a good choice. And Pennsylvania did not fall one step behind in the person of Commissioner Joyce.

It occurred to me, too, that possibly we had a lot of nerve to invite the state umpires to our conference and fill them up with testimony from telephone operators, which was not contradicted.

The fact remains that the engineer has had a hard time of it. He can go before one commission, and his conceptions fit in nicely. At the very next hearing, he may fall afoul of other beliefs, and his testimony will hardly be given penny-weight.

I noticed, too, that some commissioners have chips on their shoulders. They resent the decisions of others, and especially decry the experience of men beyond their own state.

The engineer of the company seeking relief or defense, is at a great disadvantage. It reminds me of the fable of the partnership of the lion, fox and donkey.

It seems that the three animals had piled up a nice amount of booty and about supper time it was suggested that the ass divide it up.

The poor donkey carefully sorted the booty into three piles, whereupon the lion with a roar of rage struck him down and killed him.

The fox, seeing the trend of the deal, did the lion's bid-

ding, made one small pile, and laid the big pile before the lion. The lion greatly admired his notions of equality, and complimented him highly.

Now it sometimes seems to me that the telephone company, the engineer and the public utility commission are working along these lines. The commission is the lion, the telephone company the fox, and the engineer the donkey—nothing personal, I am sure.

They ask the engineer to divide up with justice to all. Then they annihilate him, discredit him, or pay no atention at all to him, and proceed to compel a division along the lines laid down by the fabled fox.

In other words, the commissioners have all the power. There is no standard of procedure. I have heard the Wisconsin methods ridiculed by other state commissioners. Nothing seems to be laid down whereby anyone would dare to arrange three even little piles of booty.

This is no criticism of commission control. It is merely the act of calling attention to the likelihood of making the commission matter a burden rather than a help.

It is merely to suggest that it was never the theory of the act to make commissioners anything but umpires or arbitrators, and not rulers.

If this body oversteps its economic rights, it will be abolished as surely as others which break that law.

Political law may give outrageous powers to its state regulatory bodies, and clothe them with the might of a great army, but it will eventually be only a sounding brass and a tinkling cymbal.

The master of this country is the business man, and he is meekly submitting, but like Jean Valjean, he never loses a moment in planning the hour of his liberty.

Let some of the flippant members of our regulatory bodies look around for some handwriting on the wall over behind the candlesticks.

This world is rushing so swiftly onward that neither you nor I—nor any man—can do anything that will give it a second's hesitation. Whatever justice is, or may be, we are marching that way swiftly.

We have had an unusual jog in the march of justice. In your life and mine, the great predatory forces of the earth have been severely checked.

Today, the forces which caused the checking of former injustice, are still carried on by momentum, and the scales are crooked the other way.

Did you notice the manufacturers' exhibits? Did you notice the crowds which surged through the halls?

Men were there with financial plans. Plans to lead new men and new capital into a magnificent business—a business with the greatest economic foundation of them all.

We have had a long probation. Our securities have been sneered at, and it is often rumored that state bank examiners allow their prejudice to work an injustice to a good business.

I have quit worrying about the question of associations. What does it matter if there are one, two or three?

It is most natural to disagree—that is competition in some form or other. I can see no reason why the two existing associations should try to agree—they are happier as they are.

About all any of us have to do is sit tight in the boat, and try not to rock it too much. If the officers of each association go right along in the even tenor of their way, and each attend to their own business, it is all that can be requested.

I have a belief that the roads of both associations, and the Bell company as well, will yet have to meet and means be devised of staying in a privately managed business.

I have noticed that business, just as individuals, will succeed as long as it behaves itself, or lives beneath its means. If we are sensible and reasonable, we will be as prosperous and happy a generation from now as at present.

Things rarely ever go to the dogs—Germany will not be destroyed—neither will England. It is all a great big bluff. Tomorrow all the Europeans may be picking on poor Russia. Even then, prosperity will not avoid them.

I have quit worrying about business. No telephone manufacturer, operator or dealer lost more than 20 per cent. of his gross business during last year.

The annual statement of one prominent manufacturer shows but a 10 per cent. loss. Any business, which will carry to this degree of success, when the hearts of men are stopped, needs the worry of no heads.

I wonder if you thought the second time about the magnificent exhibits? And if you thought of the splendid personality of the men who governed the exhibits? Did you wonder how much loyalty and support you owed them?

Surely, you telephone men should not be blind to your own interests by allowing any of the exhibitors to be bereft of your business.

I confess that I am tired. A convention is a great strain. That is why I have wandered so much. I have a little bone to pick: One of our good friends told me he had cancelled his subscription because he did not like so much so-called Bell news in the personal column of TELEPHONY.

He said he had never sent in any news himself—not as long as he had read the paper. I suggested that if the news you would send would interest him, surely the news he sent would interest others.

Again I ask every reader to take his pen in hand and tell us just what he does not like.

One of our visitors, a New York financial man, was greatly surprised at every part of the convention. The exhibits proved to him that his impressions of a telephone monopoly were very, very wrong.

He was impressed by the technical discussion. He frankly admitted he had been taught to believe that all the brains, investigation and thought were also a monopoly matter.

He was pleased with the speeches, with the speakers, and, best of all, with the listeners. He could see no difference between the personnel of the convention than that of the bankers' convention at Boston. He was glad he came—so are all of us.

Optimism is a financial crime, yet I can not help but indulge in some of its phases as I look back over the conventions of our departed year.

There is new life and interest, and there are many new owners. The old and blasé promoter-owners seem to have completely slipped out of our memory.

The men of our last year conventions seem to be in the telephone business not as a speculation, but as an investment.

There is little we need, unless it is some sort of a financial institution—something that would solidify or give us financial weight.

Whether or not the various and many telephone companies would enter into a share holding of a centralized financing concern, remains to be seen. Some men believe that it can be done. When the request for your support comes, do not consign it to the waste basket. Give it much thought and consideration.

I am sorry to say that I did not have time to hear the regular convention in session. I can not comment upon its actions. Whether or not I am pleased, or you are pleased, is not the

question. If we are not pleased, then we can blame no one but ourselves. The worst human liability is that tendency to slip off and lick our sores in silence.

Personally, I am not displeased nor pleased. As a man interested in publishing a magazine devoted to telephone interests, I have no voice in the matter except comment.

I can not help but feel good about the outlook. It may be that we may not have a boom. It may be that business will not improve even to a noticeable degree, but it is certain that we have passed the darkest hour—whatever and whenever it was.

If you looked into telephone men's faces, you could see no trace of suffering—no sign of sorrow nor imprint of depression. Whatever of adversity there has been, has been but a purifying agent, making telephone men sweeter and stronger by reason of its action.

On the whole, telephone men can be pleased at what they heard and saw at the convention last week. The manufacturers can not help but feel encouraged by the number of buyers who have something to buy.

The engineers who meet to discuss our rate and valuation problems, wasted no time, nor did the commissioners who gave us their time and presence.

The accountants know more of the government's demands, and the government's representatives will have a greater personal interest.

On the whole, every one profited.

It matters not whether we are a five, two or one-talent business, we have no reason to be ashamed of it. Whatever our differences, let us comfort ourselves that they are for our greatest good.

For my part, I am glad simply to be the friend of every man in the telephone business. That is glory enough for any man.

MORAL: It's a good business.

Proceedings Before Commissions, Courts and Councils

Discussions and Rulings of State Bodies Having Supervision of Telephone Companies, Decisions of Courts in Matters Affecting Public Relations of Utilities and Actions of City Councils Bearing Upon Franchises, Rates and Service

Hearings in New York Rate Case.

The hearings in connection with the valuation of the New York Telephone Co.'s properties in New York City, which are being conducted by the New York Public Service Commission, are nearing a close. William McClellan, engineer of the commission, who is supervising the appraisal, has submitted a comprehensive summary of all the testimony given by himself and his investigators and Martin W. Littleton, special counsel of the commission, has summed up his part.

In the meantime, the joint committee of the New York legislature has begun telephone rate hearings in New York City. The committee met the early part of this week and heard the testimony of Professor Edward W. Bemis, who has been studying the rate situation for the committee. He suggested modifications in schedules and stated the general conditions which should be followed, but was not prepared to fix the exact reductions which, in his opinion, should be made. Professor Bemis was in direct charge of fixing telephone rates in Chicago in 1911 and was largely responsible for those prevailing in that city at the present time.

He recommended, among other things, the abolition of extra toll charges between Manhattan and the Bronx; between Manhattan and Brooklyn and that part of Queens which is included in or near Astoria; and the establishment of a flat five-cent rate. Professor Bemis testified that he was in favor of the reduction of business telephone rates from an eight-cent to a five-cent basis. The rate for residence telephones should be 600 messages for $30, with five cents for every additional message up to 1,200, after which three cents should be charged.

The witness was of the opinion that a sufficient cut should be made for private branch exchanges to make it possible for all hotels and apartment houses to make their rates five cents a message, and, further, that when more than the minimum number of messages are to be sent, it should no longer be necessary to contract to take the extra service in blocks of 300 messages in order to get the benefit of reduced rates except in such cases as demand an increase in the number of trunk lines with the increase in messages.

Professor Bemis was of the opinion that the effect of such reductions as he proposed would be to increase the number of telephones in use in the city. He said that the telephone company should collect from the public sufficient reserve to equal the accrued depreciation of the plant, and that when a plant is reproduced anew, the cost of such reproduction ought to be taken almost entirely from the reserve and only about 17 per cent. from capital.

The witness placed the figure at $65,000,000, upon which the New York Telephone Co. should be permitted to earn a return, basing it upon the fact that on October 31 the reproduction cost of the company's property in the city was $68,520,127. From this, 17 per cent. might be written off for depreciation which the company has accumulated from its customers, which would bring the value down to $56,819,692. A very liberal allowance for working capital would increase that sum to $59,000,000. Estimating allowance for depreciation in the value of land and other property which, Professor Bemis stated, the courts have always generously allowed, he placed his final figure at $65,000,000. Quoting from a decision of the Court of Appeals, the witness opposed the contention that $10,000,000 should be added to the investment as a going concern. He held that it was impossible for any company which had been paying from its inception to charge anything to the capital account on this score—and pointed out that from its start, in 1878, the New York Telephone Co. had made a profit. It was not, therefore, entitled to any allowance for going value, he said.

Professor Bemis maintained that the company could have no cause for complaint if it earned 7 per cent., which on $65,000,000 would be $4,550,000. It was pointed out that in 1914 the company earned $9,550,000. The witness further called attention to the fact that this was earned notwithstanding the reduction of 10 per cent. in rates which went into effect February 1 last year, and that the company was paying the American Telephone & Telegraph Co. 4½ per cent. of its gross receipts for telephone transmitters, induction coils, receivers, etc. This, Mr. Bemis said, amounted to about $2 a year on each telephone, whereas 60 cents would be adequate. Professor Bemis also attacked the arrangement between the two companies.

"The cost of these telephone instruments, with fair profit to the manufacturer, is under $3," he said. "Instruments of as good quality are sold on the market by Independent manufacturers for less than $2.75. To cover both maintenance and fair profit, 75 cents a year per telephone is liberal. Probably 60 cents would be sufficient."

Mr. Bemis stated that the A. T. & T. Co. did not give any local or accounting services to the New York Telephone Co., which would entitle it to the charge of $2, and he believed that at least 25 cents of it had been clear profit to the A. T. & T. Co. This meant, he pointed out, that from the 542,673 telephones in use in New York, the A. T. & T. Co. collected each year $678,341 which should have been left to be added to the profits of the New York company. Thus taking the property of that concern at $65,000,000 and allowing the company a return of 7 per cent., it would be possible to make concessions to the public to the value of $5,675,000 a year.

Following Professor Bemis' testimony, Andrew Sangster, his chief accountant in the investigation, produced tables showing the growth and earnings of the New York Telephone Co. In answer to a question by Robert L. Luce, counsel for the joint committee of the New York legislature, as to his conclusions from the figures presented, the witness said: "The company is prosperous, and is not only paying dividends, but accumulating a large surplus. In the ten months ended October 31, 1914, the percentage of profits from the city decreased by 3.11 per cent., which shows how the company has spread beyond the city limits. It is probable, however, that during 1914, judging from the first ten months, the income of the company decreased by $1,400,000."

Merchants' Association Opposed to Government Ownership.

The Merchants' Association of New York, which has conducted a campaign for lower telephone rates in New York City, has now gone on record as opposed to government ownership and operation of telephone and telegraph, after a study of the question by research experts and the committee on postal affairs. It will be of interest to telephone men to know that the association is planning a detailed and exhaustive study of the telephone systems of this country and Europe, with a view of reporting contrasting conditions under government and private ownership. Already much has been done along this line.

In accordance with the recommendation of the committee on postal affairs the directors of the organization adopted the following resolution: "Resolved, That the committee on postal affairs recommends to the board of directors that the Merchants' Association of New York vigorously oppose governmental ownership or operation of telegraph and telephone lines."

It was learned by the New York correspondent of TELEPHONY that governmental operation would, in all probability, seriously impair the present efficiency of the telephone and telegraph systems, impede or prevent the adoption of future improvements, introduce the elements of wasteful expense, inseparable from all governmental undertakings, and therefore greatly increase the cost of operation and the waste of capital investment.

It is believed that the systems can be and are more efficiently and economically operated by private enterprise than they can be by the government and that with suitable public regulation to insure just charges, fairly proportioned to the cost of supplying the service, the aggregate cost of such service to the public will be less under private than under governmental ownership and operation. It was further pointed out that telephone operation by the government under an arbitrarily low scale of charges to the public, as is proposed, would inevitably result in a large deficit to be borne by the public treasury, and that no benefit whatever to the public as a whole would arise from such shifting of costs. Such deficits of very large extent, it is stated, are actually incurred in certain present governmental undertakings and are concealed in large part by improper accounting and, it is added, no true profit comes from concealing a deficit.

An extended study of the matter on behalf of the association developed several conclusions as regards government ownership, one being that governmental operation of public utilities is invariably subject to conditions which prevent high and continuous efficiency and economy, some of which conditions are as follows:

The administration is entrusted to officials selected without special reference to experience and qualifications and subject to frequent change. They lack the intimate knowledge of details and the specialized training, which can be acquired only by long continued service and progressive advancement from the lower to the higher grades. Before they can become reasonably familiar with the operations of the service, they are replaced by others, who, in turn, are called upon to resign before they can, in the nature of things, become qualified by knowledge and experience to perform their allotted task.

A considerable proportion of subordinate employes are appointed and permanently retained upon considerations other than fitness and capacity, whereby standards of discipline and efficiency are materially lowered, the number of employes is needlessly enlarged, and labor costs are wastefully increased.

Physical equipment is seldom or never maintained at the highest or even a reasonable degree of efficiency, for the reason that proper efficiency requires not only continuous and liberal outlay for maintenance but frequent large new capital investments for the provision of new plant required by new methods, in order to reduce operating costs. The necessary appropriations for these purposes are very seldom promptly provided when needed, whence results continuous ineffectiveness of the plant and wasteful increase in operating costs.

In all important industries, material improvements in the art are constantly developed. These often render necessary the scrapping of existing plants which represent large investments, and the substitution of new and improved plants at great additional cost. Legislatures can seldom or never be induced to permit the abandonment of a reasonably good existing plant when large additional capital outlays are thereby made necessary.

For the foregoing, among other reasons, the sound economical development of any industry managed by a government, lags very far behind the standards attained in a similar in- is hopelessly obstructed, so that in its operation it inevitably dustry maintained by private capital.

As regards the operation of the telephone service by foreign governments it is pointed out that:

Governmental telephone service supplied to the public is very greatly inferior to that supplied in the United States under private ownership.

The equipment of such governmental telephone systems is, in many material respects, far inferior to that in use in America, by reason of the reluctance of such governments promptly to displace inferior equipment and substitute therefor that of a later, more improved, and more efficient type.

Relatively to the extent and excellence of the service rendered and the capital investment, the operating costs of governmental telephone systems in Europe are materially greater than in the United States, by reason of the relatively greater labor costs due to the loading up of the rolls with unnecessary and productively inefficient employes.

The revenues derived by governmental telephone systems in Europe are insufficient to meet the capital and operating charges of such systems, despite the fact that important elements of expense are omitted in the governmental showing of costs, the true cost being materially higher than those that are commonly stated. Among the omissions are many items of general administrative expense, rent, repair, maintenance of public buildings, and labor costs that are charged to other accounts, so that in the case of every European government operating a telephone system, a true financial exhibit of costs and revenues would show a material loss in operation borne by the public treasury.

Although rates for telephone service commonly charged the public in European countries are ostensibly less than the rates charged in the United States, it is stated that the difference is

more apparent than real, for the reason that in all European countries the purchasing power of money is materially greater than in the United States. Before any valid comparison can be made, this difference in purchasing power must be ascertained as the basis for comparison. Moreover, a given sum in the United States supplies a service incomparably superior, in promptness, quality and extent, to that which is supplied by a given sum in Europe.

Bell in Spokane Cannot Operate Under Home Franchise.

That the Pacific Telephone & Telegraph Co. cannot legally operate under the franchise of the Home Telephone & Telegraph Co., of Spokane, Wash., is the opinion of the city council in a decision recently rendered by Corporation Counsel H. M. Stephens.

This action is the result of a notice filed by the Pacific Telephone & Telegraph Co. of the consolidation of the Pacific and the Home telephone companies and the future operation of the joint property under the franchise of the Home company, to be known as the Home Telephone & Telegraph Co.

The opinion of the corporation counsel holds that the move of the Pacific company is illegal for three reasons, to wit:

The provision in the Home franchise prohibiting a transfer of the Home company's rights to any other person or corporation engaged in the telephone or telegraph business; the resolution of the city council adopted June 22, 1914, agreeing to a consolidation of the two telephone systems, but requiring that the Home franchise be surrendered, terminated and canceled; and the modified decree of the federal court agreeing to the merger of the two plants, to be owned by the Pacific Telephone & Telegraph Co.

Attorney Stephens admits, however, that this conclusion is attended by serious difficulty and doubt. One of these points is that the modified decree of the federal court was made on the assumption that the city and the Pacific telephone company had agreed on a franchise, and that the court acted without reference to the referendum election in which the Pacific franchise was defeated. The city in this franchise agreed that the Pacific could acquire all of the property and rights of the Home company except its franchise. However, this implied agreement has no force now, since the franchise has been repealed.

In conclusion Attorney Stephens suggests that the Pacific company may be willing to accept a shorter term franchise, with a specific agreement as to rates for a stated term, and that rates thereafter be fixed by the public service commission.

Attorney Frank T. Post, president of the Home Telephone & Telegraph Co., took the position that no legal question is involved in the telephone franchise situation.

"The Pacific company, with $3,000,000 worth of property on its hands, found itself an orphan, having no franchise," said Mr. Post. "It then sold its property to the Home company and went out of business. The Pacific company has been eliminated from the field entirely and is no longer an object of consideration. The Home company is operating under a franchise granted by the sovereign will of the people, the legality of which I think is above reproach."

Public Utilities Bill Introduced in Texas Legislature.

At the recent session of the Texas legislature a measure was introduced by Senator Robbins and Representative Lewelling, providing for the creation of a public utilities commission, with authority to supervise all public service corporations doing business in Texas. The commission is to be composed of five members, appointed by the governor.

The bill provides that all members of the commission must be men of ability and successful in their business or profession. One must be a lawyer of ten years' experience, one a civil or mechanical engineer and one a successful financier. None of them is to be politicians or affiliated with any public utility.

The commission is to be given supervision over construction, bond issues, rates and charges and may at its discretion provide for uniform systems of accounting. It can require telegraph and telephone companies when possible to give connections and through lines whenever practicable.

Summary of State Commission Hearings and Rulings.

ILLINOIS.

February 16: Continued hearing in the case of the city of Peoria, Ill., against the Central Union Telephone Co., in which the city complained of poor service and excessive rates. At this hearing the company is requested to report whether the appropriation for improving its system, as agreed to at a previous hearing, has been made.

INDIANA.

February 28: Hearing in regard to the petition of the Tipton Telephone Co. to have its contract with the city of Tipton, Ind., annulled.

KANSAS.

February 6: Hearing on the complaint of Prof. O. S. Groner, of the Ottawa University, upon the service furnished by the Kansas City Long Distance Telephone Co. in Ottawa, Kans.

March 9: Hearing on application of the Missouri & Kansas Telephone Co. for permission to increase rates at Parsons, Kans.

MICHIGAN.

January 21: Order approving a $500,000 bond issue of the United Home Telephone Co., of Ludington, Mich., $55,325 of which is to be used to retire the company's floating indebtedness and $150,000 for improving the local plant.

MISSOURI.

January 28: Application filled by Mary P. Winston to sell, and by Haston Allen to buy, the Thayer & Alton Telephone Co., of Thayer, Mo.

February 1: Hearing in the controversy between the Cassville Telephone Co. and the Farmers Mutual Telephone Co., of Barry county, Mo., in regard to the right of a mutual company to operate without a certificate of public convenience and necessity.

NEBRASKA.

January: The Ansley (Neb.) Telephone Co. has been authorized to reduce its toll hate from Ansley to Arcadia from 20 cents to 15 cents and to make a flat rate of 50 cents a month for Ansley subscribers over the Arcadia exchange. The company has also been authorized to discontinue its toll station at Westerville.

January: The Octavio (Neb.) Telephone Co. has been given permission to issue additional capital stock to the amount of $200 for the construction of new lines.

January: The Union Telephone Co., of Wausa, Neb., has been authorized to make the following reductions in rates: From Wausa to Bloomfield, 25 cents to 15 cents; from Bloomfield to Center, 25 cents to 20 cents; from Bloomfield to Crofton, 25 cents to 20 cents.

January: Order authorizing the Hooper Telephone Co., of Hooper, Neb., to increase its rates for individual line service 25 cents per month.

NEW JERSEY.

January 29: Hearing at Jersey City on investigation as to the legality and reasonableness of the rates charged for service in Bayonne, N. J., by the New York Telephone Co.

OHIO.

February 9: Joint application of the Payne Home Telephone Co., of Payne, Ohio, for permission to sell, and Sarah A. McHenry to buy, the properties of the Payne company, granted. The commission also granted Sarah A. McHenry authority to issue $8,972.45 6 per cent. mortgage bonds, to be delivered in full and final payment of the purchase price for the property of the Payne Home Telephone Co.

WISCONSIN.

February: The Clark County Telephone Co., of Neillsville, Wis., granted permission to increase its rates 10 per cent., the change to become effective March 1.

February: Petition filed by the Farmers Co-Operative Telephone Co., of Doylestown, Wis., for an order compelling the Peoples Telephone Co., of Cambria, to keep in repair and maintain service of the toll line built by the Doylestown & Cambria Farmers Telephone Co., to which the Peoples company is successor. The question at issue is whether a company can buy a line and disregard the agreements of its predecessor

February 11: Hearing on investigation instituted by the Wisconsin Railroad Commission into the rules, regulations and practices of telephone companies operating in the state of Wisconsin with respect to the collection of service rentals.

Local Telephone Operating Rules and How Developed

A Serial Story Dealing with Local Operating Terms and Rules—Reasons for Their Use—A Real Study of Rules Beginning with Fundamentals and Developing All Essential Factors in Operating Room Practice, for Both Small and Large Exchanges

By Paul Hamilton

"I think," said Mr. Walters after their return from the hotel in Pensacola, "that we are in a position to take up instructions for operators."

"It does seem as though we are fairly well prepared to select our student and start her on the high road to efficiency in serving the public," agreed Mr. Burke.

"I should think you'd need to take a long, long, breath after that," commented Miss Floyd.

"You two!" exclaimed Miss Sible in a loud undertone.

"I presume a discussion of 'Number, please?' or a modification of it is now in order," anounced the chairman.

"It cannot be that anyone entertains an idea of changing the time honored phrase, 'Number, please'?" said Miss Sible. "It would be like attempting to change the letter A of the alphabet."

"I have copies of three rule books here, for our reference and guidance," spoke up Mr. Carney. "They may prove of some assistance in getting at our requirements and classifying them afterwards."

"Why haven't you brought them forward before?" inquired Mr. Burke.

"They would have been of no assistance in connection with the line of march our discussion has followed," returned Mr. Carney.

"You don't mean to say that we have made an entirely new discovery in giving attention to the applicant?" Mr. Burke proceeded with his inquisition.

"Oh, no, but I find that there are few, if any, published or even recorded rulings emanating from such conferences as this. Most of the larger companies have a routine which they follow covering much of the same ground that we have gone over, but it does not form a part of their promulgated records or rules," answered Mr. Carney.

"Well then, there is some precedent for our discussion and conclusions," concluded Mr. Burke.

"Since Mr. Burke has received the desired assurance that his efforts have not been wasted, we will proceed with business," ruled the chairman. "If not the topic, 'Number, please?' to which Mr. Carney appears to object, may I ask what the order of business is?"

"I find in each of the rule books I have examined, a course of general instructions. In one, it appears as the opening chapter; in another, in about the middle of the book; while it comprises the last chapter of the other."

"And which arrangement do you consider the most perfect or useful?" Mr. Walters inquired.

"It appears to me that the topics covered in 'General Instructions' should be the first called to her mind in taking up the study of operating."

"I should think," said Mr. Prince, "that a statement as to the duties of an operator should be the first thing to be outlined, as all the rules, regular and miscellaneous, refer to that only."

"Well, what are the duties of an operator?" asked the chairman. "Don't all speak at once, please."

"Without special consideration as to phraseology, her duties are to sit at the switchboard and see that the subscribers' requests are properly complied with," said Miss Sible.

"A little too broad, I am afraid," argued Mr. Carney. "She has little to do with granting or refusing requests of subscribers."

"But she must see that they are properly disposed of," maintained Miss Sible.

"But," said Mr. Prince, "I must agree with Mr. Carney that the statement implies more than it means. Miss Sible will not deny that. In the first place, how does the subscriber's request reach the operator? Simply by means of her answering his call."

"Then you would assume that her duties, or duty, consist in answering calls?" Miss Sible asked.

"That is exactly why she is employed," answered Mr. Prince. "I realize that the calls are to be disposed of, but how this shall be accomplished will be explained to her later."

"I think I see a light," said Mr. Burke. "'The first or most important, or the chief—(take your choice—no extra charge)—duty of an operator, is to respond promptly to the signals upon the switchboard following the routine method hereinafter outlined.'"

"Very good, as far as it goes," said Mr. Carney. "Why not add: 'She will report promptly to her superior any condition that may arise which interferes in any manner with her performance of her duty as above outlined.'"

"Suppose we should say 'promptly and courteously'?" asked Mr. Prince.

"Courtesy is such an important feature that it should be given separate mention," answered Mr. Carney.

"I think Miss Sible brought up the original question," Mr. Walters stated. "Has she anything further to say?"

"I am reconciled to Mr. Burke's interpretation of the subject," that lady replied, looking at Mr. Carney, who returned her smile willingly.

"Well then," the chairman continued, "shall it be 'first, most important or chief' duty?"

"Bounden is an old and accepted term. I have seen it in books since I was a child," said Miss Floyd.

"Its period of use then is too brief to establish it for general use," Mr. Burke answered.

"You two!" Miss Sible exclaimed.

"We are not in Indiana," Mr. Prince observed. "I would suggest another word, and say 'principal duty.'"

"Then what will we have?" the chairman inquired.

"'It is the principal duty of an operator to respond, promptly and courteously, to the signals upon the switchboard, following the routine method hereinafter outlined,'" read Mr. Burke. "But here," he added, "I have usurped the duties originally assigned to Miss Sible."

"You are quite welcome," replied that lady.

"You have picked up the bundle, carry it along aways," Mr. Walters directed. "Everybody satisfied with the opening stanza?"

"I am rather in favor of giving place to Mr. Carney's suggestion about reporting difficulties," said Mr. Prince. "How did you say it, Carney?"

"My suggestion was that we add: 'She will report promptly any condition that at any time may interfere with the performance of her duty, as above outlined, to her superior,'" Mr. Carney answered.

"Shall that be made a 'part and parcel' of the original statement?" Mr. Walters inquired. "Anybody any objections?"

"Then we will have," Mr. Burke said without being called upon, "quite a presentable paragraph."

"'It is the principal duty of an operator to respond, promptly and courteously, to the signals upon the switchboard, following the routine method hereinafter outlined. She will report promptly any condition that at any time may interfere with the performance of her duty, as above outlined, to her superior."

"Well, so far we have outlined her duty and fixed her responsibility," said the chairman.

"We haven't said so," contended Mr. Prince. "We haven't mentioned responsibility, so far as I have heard."

"No, but it is implied, is it not?"

"You can't reprimand a girl for not comprehending your implications. I think we should come out in black and white with what we want her to know."

"I am in sympathy with Mr. Prince," said Miss Floyd. "If we are going to hold her responsible for anything, let us say so and be done with it."

"Well then," said Mr. Walters, "for what is she responsible, and to whom?"

"It is generally stated that she is responsible to the public for the service," said Miss Sible. "Those were my instructions."

"I maintain she is not responsible to the public, but to the management. The management is responsible to the public," argued Mr. Carney.

"That may be so but she delivers the goods," said Mr. Prince.

"Even so, the receiver of a damaged package does not go to her for damages," replied Mr. Carney. "In this book in my hand, it says she is responsible to the public for the service rendered. It is an ambiguous statement. She is responsible to the management, or her superior, as you choose, for the service rendered *to the public.*"

"I think Carney is correct," agreed Mr. Burke. "The public has no recourse to or control over her. It is known that all the phrases she is directed to use, do not meet with public approval at all times, yet the public cannot order them changed or obliterated. She must be responsible in every sense of the word to those who give her instructions."

"Well let's fix her responsibility, if that is the next thing in order," the chairman ruled.

"We might say, then," Mr. Carney began: "'An operator is responsible to the management or her superior—as you choose—for the service rendered to the public. The management must necessarily delegate a part of its responsibility to the public to the operator on account of her direct dealings with its patrons'."

"Wouldn't it be well to state where the limit of the responsibility thus delegated, rests?" inquired Mr. Prince.

"Well, it extends as far as her instructions with regard to the use of phrases, etc., apply to her work."

"Can't we state that definitely? Mr. Burke inquired. "Can't we say that the rules are compiled with a view to directing the operator in her dealings with the patrons and that she has no authority to venture across the line of demarcation?"

"That would be quite possible, perhaps, but we are not writing an encyclopedia," Mr. Carney answered. "Brevity is our first requirement."

"We tell her she is held responsible for certain things," said Mr. Prince, "and at the same time we go on and give careful directions as to how she is to meet this responsibility. Won't she put two and two together?"

"More implied meanings," said Miss Floyd. "We say to her that we delegate to her certain of our responsibilities. We certainly ought not to find it a severe task to add that we also circumscribe her actions by certain rules by which she must govern her actions."

"Perhaps it can be accomplished," spoke up Mr. Burke. "Let's consider a moment. Hadn't we better get Mr. Carney's statement in a desirable form before proceeding further?"

"After recess," said Mr. Walters. "Candy for the ladies and cigars for the gentlemen, are the best Pensacola affords this late in the season."

"Tutti fruitti and ice cream when you venture into my balliwick," said Mr. Burke as a general comment but aiming it at Miss Floyd.

"Oh, you two!" exclaimed Miss Sible with a brave attempt to sneer, at which remark, Miss Floyd turned her back and began listening to what presumably was the remainder of the fish story that had been interrupted in the morning. At any rate she and Mr. Burke were still engaged in conversation when Mr. Walters again called the session to order.

"Well, Mr. Burke, presuming your mind is somewhat refreshed, you can, perhaps, disentangle Mr. Carney's statement into its pertinent factors," said the chairman.

"Can't Carney carry his own bundle to the depot?" asked Mr. Burke, "but never mind, I'll be pack horse j-u-s-t t-h-i-s o-n-c-e. I believe Mr. Carney wished to convey the idea that the management assumed all the responsibility for the service with relation to public criticism. Was that not the case, Mr. Carney?"

"I don't know that I had thought it out as clearly as that, but I will accept the interpretation," that gentleman answered.

"'Although the management is responsible to the public for the service rendered, certain direct dealings with its patrons must be delegated or entrusted to the operators. For the purpose of her guidance, certain definite rules have been laid down which circumscribe her dealings with the patrons. Her responsibility rests in the rigid application of these rules in the performance of her duty!' There now," and Mr. Burke assumed an air of perfect indifference.

"Burke's preliminary training as a lawyer was not wasted after all," remarked some one.

"He set out to be a sailor, or a school teacher, I don't recall which," said Miss Sible, whereupon Mr. Walters rapped upon the table with ludricous severity.

My father was a captain bold
And all his life did sail, sir,
And in his good ship Albatross
He weathered many a gale, sir.
The crew in mutiny broke out,
He drove them up the mast, sir,
And with his ax, those mutineers
Into the sea he cast, sir.

"And so goes the story," and the irrepressible Mr. Burke gazed serenely about him as if endeavoring to call to mind another stanza.

"Quite interesting, to be sure," Mr. Prince remarked, "but I have in mind some suggestions with regard to the paragraph relative the duties of an operator. I would omit the word 'delegated,' as 'entrusted' expresses our meaning. And for 'circumscribe,' I would substitute 'govern'."

"Then just what wording of the whole, would you suggest, Mr. Prince?" Mr. Walters asked.

"'Although the management is responsible to the public for the service rendered, certain direct dealings with its patrons must be entrusted to the operators. For their guidance, definite rules have been laid down which should govern their dealings with the patrons. Their responsibility to the management, rests in the rigid application of these rules in the performance of their duties."

"That appears to outline her duties and responsibility," said the chairman. "Has any one anything further to say on this topic?"

"Now we have charged her to do certain things, perhaps a word of encouragement, telling her that it will be worth her while, would find a proper chonological place," remarked Mr. Burke.

"Very well," said Mr. Telson. "In my case, the best I can do is to promise due and timely appreciation. There is so little chance for either increase in salary or advancement by

rank, that I don't see as a promise along that line would be of any value."

"Well," began Mr. Carney, "can we say truthfully, as it says in this book I am holding, 'Operators salaries are governed by the grade of service rendered to the subscribers,' etc.? Is the number of calls she handles, really a greater factor in working out the operators general efficiency?"

"I think it is," Miss Sible replied, "for poor service is, in many cases, the result of overloading her position."

"But in small exchanges that is generally a problem which cannot be properly handled," said Mr. Prince. "For instance, in an exchange with but four or six positions. These are usually loaded to the maximum and the additional expense of adding a section of switchboard for a few additional subscribers cannot be justified. Consequently the additional load must be thrown upon the most capable operators."

"Well that appears to me to be an entirely different matter from the line of work we set out to follow," said Mr. Walters, "but it is now time for adjournment."

(To be Continued)

Practical Subjects—Letters and Discussions

Transcontinental Telephony.

Much space was given recently in the columns of the press to general statements bearing upon the reported successful attempts to converse telephonically across the continent. These statements were undoubtedly read with considerable interest wherever they appeared. The impression gained is that such a result could not have heretofore been obtained. Moreover, the layman and indeed, many engineers, would assume that this transcontinental talk was accomplished because the engineers of the American Telephone & Telegraph Co. had found the way.

It is not generally and definitely known by what means, nor at what relatively enormous expense, this particular experiment was carried out. The writer has no desire whatsoever to belittle the efforts of any of those who have in any way contributed to the success of this undertaking; neither does he know positively the means employed to the end. However, by piecing together fragments of those statements which have been permitted to go into print, a fairly good idea may be had of some interesting side lights.

A part of an article appearing in the Technical World Magazine for February, 1915, by Walter S. Hiatt, contains this statement: "But Pupin's invention did not go far enough. It was still impossible to carry the voice across the continent. It has remained for the newly-invented repeater to do this—a device which gives new vigor to the sound of the voice after it has passed through a vacuum."

From this, it is concluded that the so-called repeater is of the "audion" type. This device was developed by Lee deForest as an amplifier or detector for wireless telegraphy prior to October, 1906, since in October, 1906, Mr. deForest presented a voluminous and highly interesting paper before the American Institute of Electrical Engineers bearing upon this form of repeater. Undoubtedly much work had to be done to refine the audion for telephonic use, since it is one thing to detect and amplify impulses and quite another matter to pick up and amplify the complex waves of telephonic speech currents.

The Associated Press reports of this test stated among other things, that Mr. Watson conversed from the San Francisco end and reports that gentleman to have said: "Of course, you know we are really talking over 6,800 miles of line, since we cannot use the earth for a return circuit as we did in the early days". It was also stated that the line from New York to San Francisco was 3,400 miles long, that it was made up of No. 8 B. W. G. copper wire strung on porcelain insulators, there being four wires all told in the circuit and all of the wires loaded with Pupin coils.

It would seem, therefore, that with the audion type of repeater, the line must be loaded with Pupin coils in order that an approximate equality in the attenuation of telephonic speech current wave forms shall result, since the audion cannot compensate for the greater attenuation of the higher telephonic frequencies. Pupin coils are an expensive part of the equipment to install and a very troublesome detail to maintain on overhead lines. Moreover, a 3,400-mile line must be *just right,* else one or more loading coils will greatly impair transmission.

The statement of Mr. Watson would indicate that this particular transcontinental talk was achieved by talking west over one pair of loaded No. 8 wires and using another pair of similarly loaded wires to talk back. From this it is inferred that the use of the repeater in the transmission circuit rendered it impossible to talk in reciprocal relation over either pair of wires. Consequently, the interesting fact seems to present itself that the use of the audion is limited to such circuits and conditions as are represented by loaded lines comprised of four wires, one pair for talking in one direction and one pair for talking in the opposite direction, making it desirable to have the transmitter and receiver of subscribers' sets in separate circuits. One can imagine the commercial usefulness of an equipment that costs more than twice as much as would another equipment for performing the same service.

It is not the purpose or intent of this communication to compare one system of transmission relative to another. The writer happens to know, however, that it would have been possible to talk from New York to San Francisco a great many years ago, if four wires had been provided for the purpose, without the use of Pupin coils and without the use of an audion type of repeater. He also happens to know that it would have been possible some years ago to talk from New York to San Francisco and vice versa over two, three or four wires without the use of Pupin coils and without the use of the audion type of repeater.

As a confirmation of this statement, the reader may refer to an article in the Philadelphia Press of September 15, 1912 and a later article appearing in TELEPHONY, page 35 and editorial comment dated February 15, 1913.

The adage "Advertising pays," has been accepted as a guidance in this country of intensive commercialization, whether it bring results in the form of increased earnings or whether it produces the desired moral effect, and this irrespective of the cost.

Nevertheless, transcontinental talk has apparently been shown to be a possibility. This is an advancement, even though the expense attached to the accomplishment is great in the face of what could have been done long ago.

Buffalo, N. Y. Elwood Grissinger.

Federal Trades Commission and the Telephone Industry.

The federal trades commission act was created to enforce more honesty in business, and particularly in a business wherein the supply of a commodity is traded in.

From TELEPHONY'S summary of the enactment, it appears that the commissioners may act as policemen for anti-trust court orders upon request of the attorney general; that the President, the House or the Senate, may invoke the

"search warrant" powers of the commissioners. Therefore, if your business is thought to be damaged by the illegal acts of a competitor, you may offer prayers for relief to the President, your senator, your congressman, or the attorney general of the United States.

The result of your prayers may be the establishment of good grounds for your taking direct legal action against your competitor for damages, and at the end of such a suit you might recover three times the actual damages, including a reasonable attorney fee.

It would appear that if the Bell company is giving free service, or other forms of discrimination, such as exclusive hotel contracts covering large commissions, you could at least worry the subscriber and the Bell, by asking your national representative to have the trades commission investigate. It would be worth trying out in any event. Further, the bill explicitly prohibits an officer of a common carrier company from influencing the purchase of more than $50,000 worth of supplies in one year from his concern. But there are few Independent officers whose concerns are liable to bid on that amount of supplies in any one year. It it should so happen that the $50,000 worth was purchased it would only be necessary to open the balance of the market to outside bidders.

To avoid this situation the Bell company would only find it necessary to distribute the Western Electric stock held by the A. T. & T. Co. to its shareholders pro rata, and within two years segregate the board of directors from any interlocking relationship. Standards for materials to be purchased might still be made that of Western Electric supply, patents and consistent types, thereby holding the trade.

Now that the trust program of the Democratic administration is finished, we may assume that the Bell and Independents will adjust themselves to the letter of the law without much trouble, and business may proceed along lines not unlike those of the past.

The Independent manufacturer is now confronted with a prospect of the Western Electric Co. stepping out from behind its parent and asserting that its standard is such that all operating companies should purchase from it without competitive bidding. To forestall this plausible situation it would appear to the writer that it is high time for the establishment of a national bureau of telephone standards, which shall set forth permissible conditions that are to prevail in approved materials and specifications for commercial telephone service, with classifications relative to service factors and rates.

Such a basis would then enable Independent telephone supply houses to enjoy the fruits of anti-trust legislation, and largely widen the scope of state utility commissions and subscribers' use of equipment. The National Board of Underwriters by their enforcement of wiring rules and approved forms of equipment, gives us a limited example of what a governmental telephone bureau of standards could do for us, only to a much greater extent.

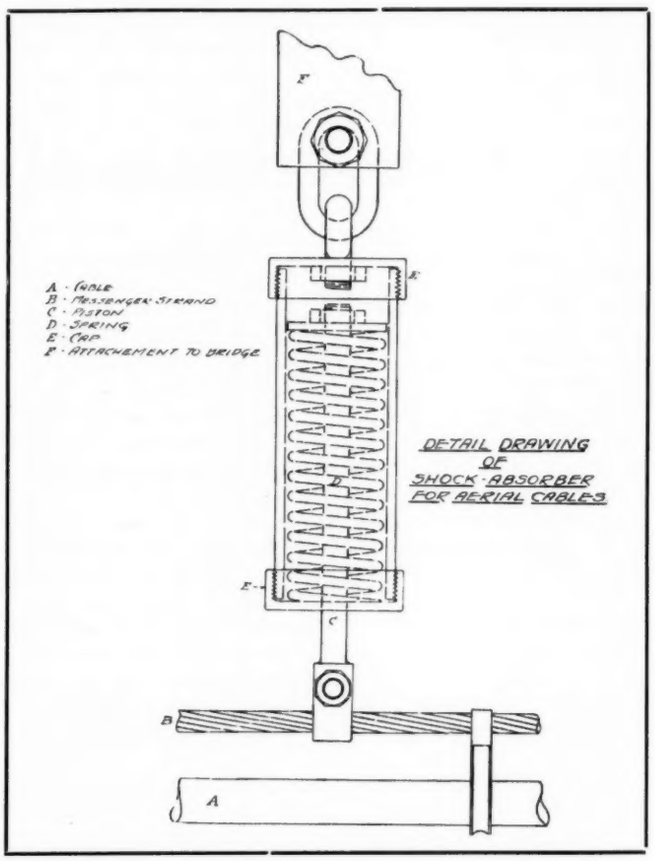
Chicago. Garrison Babcock.

Shock Absorbers on Aerial Cable.

The application of apparatus which has been developed for use in other lines of work oftentimes works out advantageously in the telephone business, says D. M. Cloak in The Telephone News, Philadelphia. An example of this is the use of special shock absorbers recently installed to support the new aerial telephone cable across the steel suspension bridge over the Schuylkill River at Hanover Street, Pottstown, Pa.

Previous to the installation of the new cable, the telephone company maintained a 60-pair, 22-gauge cable supported from each cross-girder located 40 feet apart. Considerable trouble was experienced in the old cable from crystallization of the sheath, due to the vibration of the bridge. This trouble was partially eliminated by removing alternate hangers and making the spans 80 feet instead of 40 feet.

When the new cable was placed, it was decided to apply



Details of Shock Absorber for Aerial Cables.

the principle of the automobile shock absorber for supporting the suspension strand to the cross-girder. The specially designed suspension springs, shown in the accompanying illustration, were therefore developed and, as an experiment, installed on the bridge.

This spring consists of a piece of two-inch wrought iron pipe with caps on each end drilled with a half-inch hole; the upper cap having an eye-bolt with a nut on the inside. A piston rod with a 1½-inch head works through a spiral spring and a hole in the lower cap. The weight of the spring varies according to the length of the span and the size of the cable. The messenger strand is connected to the end of this piston rod and the cylinder is attached to the bridge by an eye-bolt in the top and a link and collar.

The new cable is a high grade cable of 50 pairs and is suspended to the bridge on 80-foot spans, there being eight attachments in all. This cable was placed in January, 1914, and no trouble has been experienced, due to the crystallization of the sheath, since the installation. The idea is apparently working out to advantage and may be of help to those who have met with difficulties of this kind.

The simplicity and small cost of the shock absorbers recommends their use in places subject to vibration, rather than more expensive construction which is sometimes necessary to overcome such trouble. On the long spans the vibrations are especially severe. The shock absorbers in use on the Pottstown bridge are shown in the illustration. The inventor of this device is H. C. Kunkel.

Tentative Standards for Telephone Service in Illinois

Recommendations of Illinois Public Utilities Commission Discussed by Prominent Telephone Men at Conference Held in Springfield—Suggested Rules Declared Acceptable to All Interests—Summary of Rules Proposed by the Commission

An important conference for the purpose of discussing tentative standards for telephone service in Illinois was held by the Illinois Public Utilities Commission and heads of telephone companies at the commission's office in Springfield on January 29. A large number of representatives of various telephone interests discussed in detail the recommendations of the commission which have not yet been finally acted upon.

Among the prominent telephone men who spoke on the tentative standards were: C. H. Rotger, Springfield, general manager for the receivers of the Central Union Telephone Co.; H. L. Reber, general manager for the Kinloch Telephone Co., St. Louis, Mo.; E. D. Glandon, manager of the Pike County Telephone Co., Pittsfield, Ill.; Ben B. Boynton, attorney for the Independent Telephone Association of America and Mr. Larned, representing the Bell company.

Except in some minor details the tentative rules were declared acceptable to all interests. A number of changes were suggested in phraseology, however, and in Rules 7 and 8 there was considerable difference of opinion as to the proper standard for prompt service, some of those speaking believing that the standard should be better than 85 per cent.

A summary of the tentative rules is as follows:

Rule 1. The lines and equipment of each telephone utility shall be so constructed and maintained as to eliminate, as far as practicable, all cross talk and noise resulting from leakage and induction, and to insure good transmission over local exchange lines and long lines ordinarily used in the transmission of messages or conversations.

Rule 2. On new construction not more than four subscribers shall be connected on any local exchange line, and not more than ten subscribers shall be connected on any rural line having a length of eight miles or less. On rural lines of greater length this number may be exceeded, but in no case should more than 15 subscribers be connected on any rural line. Existing rural lines now having more than 15 subscribers connected shall be reduced to 15 subscribers or less as promptly as practicable.

Rule 3. Each telephone utility furnishing service between any two cities or villages should maintain at least one trunk line for through traffic between such cities or villages with which no subscribers' instruments are connected. Where the through traffic warrants it, additional lines shall be provided sufficient to maintain adequate service.

Rule 4. Each telephone utility shall make such tests and inspections of its lines and equipment as may be necessary to insure the maintenance and operation of such lines and equipment at the highest standards of efficiency.

Rule 5. Each exchange shall have sufficient central office equipment to meet all requirements and shall have sufficient operating force to handle the traffic at all times adequately and efficiently. Traffic studies shall be made at regular intervals by each utility in order to provide for necessary extensions to the equipment and additions to the operating force, and to demonstrate to the commission that sufficient equipment is in service and the necessary operating force employed to handle the traffic with reasonable facility.

Rule 6. Every telephone utility shall make reasonable efforts to provide for meeting of emergencies such as failure of lighting or power service, sudden increases in traffic, illness of operators, and should issue instructions to its employes governing the methods to be followed in promptly clearing trouble resulting from storms, fires and other emergencies which seriously affect the service.

Rule 7. Any telephone exchange serving more than 500 subscribers shall be considered as giving reasonably prompt service if 94 per cent. of all the calls are answered in ten seconds or less. All other telephone exchanges shall answer at least 90 per cent. of the calls within ten seconds. Where the traffic is insufficient to require the entire attention of an operator and the exchange is operated in connection with other work, slower service may be adequate.

Rule 8. Speed of service for exchanges of each class should conform to the following standards:

		Class 1	Class 2
		Per cent.	
(1).	Speed of answer to line signal.....	94	90
(2).	Speed of answer to flash signal.....	70	65
(3).	Speed of disconnection after completion		
(4).	Speed of answer by long distance recorder	94	90
(5).	Percentage of errors.....	5	5

Rule 9. Each telephone utility shall adopt suitable rules and instructions governing the methods and phraseology to be used by operators in the handling of all calls.

Rule 10. Telephone directories of exchanges serving more than 1,000 subscribers shall be revised semi-annually. The directories of all other exchanges shall be revised at least once each year. Directories for exchanges serving more than 1,000 subscribers should contain, in addition to the alphabetical list of subscribers, a classified list of business subscribers. All directories should be dated and should contain a schedule of the exchange service rates, the rules and regulations governing the conduct of the business of the telephone utility, and such instructions as may be necessary to inform subscribers of the action they should take in order to obtain adequate and efficient service.

Rule 11. Rules and regulations governing toll service shall be posted in all public pay stations, and printed in all directories.

Rule 12. Every telephone exchange shall maintain an accurate record of all complaints, interruptions or irregularities of the service, such record to include the date and time the trouble was reported, the nature of each complaint or irregularity, the duration of same, the action taken to clear the trouble, and the date and time such trouble is cleared. All reasonable efforts should be made to eliminate interruptions and irregularities and to properly care for all complaints that arise.

Rule 13. For the purpose of assisting the commission in enforcing these standards, each telephone utility shall file with the commission the name and address of the official or employe with whom service complaints and reports of irregularity shall be taken up to insure prompt and careful attention to such complaints and reports. One copy of each issue of the directory shall be filed with the commission at the time of the distribution of such directory.

Toll Service.

Toll service should be properly routed to give most efficient service as well as justice to the telephone companies where more than one utility is involved. In general, toll circuits should be tested out early each morning in order that trouble may be promptly eliminated. This is particularly important after storms. On joint lines or when one utility uses the lines of another utility, trouble on circuits should be promptly reported to the utility responsible for the maintenance of the

line. Accurate and convenient timing devices should be installed in order that toll charges may be just, and that the service may not be unnecessarily delayed in order that the calls may be properly timed. The tone of voice used by operators is very important, particularly on toll service. Toll operators should cultivate not only a distinct articulation, but low tones and pleasing voice. This would aid materially in giving satisfactory service at highest efficiency. A record of the condition of long distance circuit entering each exchange should be maintained for the convenience of the utilities in properly maintaining their lines, and for the commission's inspectors in investigating service conditions over toll lines.

New Toll Contract Offered by Bell in Pennsylvania.

It is reliably stated that in Western Pennsylvania the Bell telephone interests are offering a dual connection contract to the Independent companies which is much fairer than anything before offered in that territory by the Bell company. The contract is for long distance connection, expressly said to be non-exclusive and on a graded commission basis to the originator of the toll call. For tolls of ten cents and under, the commission offered is 60 per cent. For larger tolls, the commission ranges from 40 or 50 per cent. down to 10 per cent., it is said.

The accountants of the larger Independent companies allege that the result would be that on the total business for a month, the Independent companies would do well if they received 15 per cent., let alone the fact that out of that 15 per cent. they would have to do the collecting, stand the loss of uncollectable or disputed tolls and pay the 10 per cent. usually expected by pay station operators. The contract offered does not appear to be in any great favor among the Independents, as they are allowed 30 per cent. commission for origination by the rules of the Eastern Traffic Association.

However, it is understood that the dual connection under this agreement is being tried out at one or more points in Erie county and, no doubt, if fair treatment is accorded all parties to old Independent connection contracts by the Bell company, the new arrangement will be a success.

Names of Those Registered at National Convention

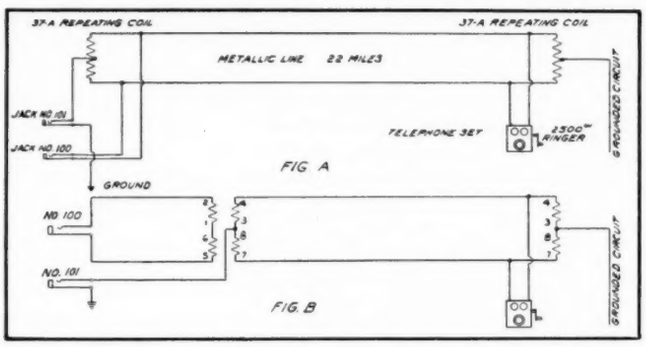
Concluded From Last Week.

Reid, A. C., Genoa, Ill.
Rae, James A., Sioux City, Iowa.
Redmond, M. W., Chicago.
Ramsey, W. H., Auburn, Ill.
Robson, W. H., Chicago.
Rader, F. A., Topeka, Kans.
Robinson, J. A., Kansas City, Mo.
Randall, M. A., Joplin, Mo.
Rodormer, George W., Chicago.
Riley, E. J., Attica, Ind.
Rankin, R. R., Chicago.
Roberts, Miss H., Chicago.
Russell, J. A., Chicago.
Roberts, W. J., Kansas City, Mo.
Reinke, Eugene A., Rochester, N. Y.
Rowe, H. A., Elkhart, Ind.
Rotherfan, Mrs. H. B., Kansas City, Mo.
Rickerson, F. H., Chicago.
Ruehlmann, F. J., Chicago.
Richmond, N. S., Chicago.
Reyer, W. C., Madison, Wis.
Risser, J. F., Des Moines, Ia.
Reynolds, F. S., Rushville, Ind.
Runkel, F. H., Portage, Wis.
Rhode, W. O., Aurora, Ill.
Russman, C., Lamoille, Ill.
Rhodes, J. H., Wilmington, Ill.
Renwick, R. H., Walnut, Ill.
Roberts, A. J., Kansas City, Mo.
Roller, Miss Hazel M., Polo, Ill.
Rebel, Paul, Chicago.
Sterrett, E. S., Henry, Ill.
Schotta, Robt. R., Chicago.
Stewart, S. D., Chicago.
Snyder, Thurman G., Columbus, Ohio.
Sorensen, A. C., Aurora, Ill.
Swanson, F. E., Chicago.
Scott, W. H., Detroit, Mich.
Schmucker, Miss Olive, Polo, Ill.
Scoville, G. A., Elyria, Ohio.
Saunders, G., Grinnell, Ia.
Staub, F. X., Ft. Wayne, Ind.
Shereft, H. H., Oskaloosa, Ia.
Stevens, Rollo R., Columbus, Ohio.
Stazak, M. B., Chicago.
Singler, Charles E., South Bend, Ind.
Spencer, W. H., Chicago.
Shafer, Henry, Chicago.
Sayers, R. C., Fairfield, Iowa.
Smith, Frank C., Chicago.
Schulz, Miss C., Chicago.
Scott, W. H., Detroit, Mich.
Shoemaker, W. H., Columbus, Ohio.
Stone, G. L., Greenville, Ill.
Safford, J. W., Troy, Ohio.
St. John, L. C., Chicago.
Stoops, Claude R., Nappanee, Ind.
Surrell, A. W., Dayton, Ohio.
Strickler, F. R., Franklin, Ind.
Steinberger, F., Brooklyn, N. Y.
Smythe, W. W., Jr., Chicago.
Smith, C. E., Morenci, Mich.
Sipperly, Lewis, Chicago.
Shafer, Earl P., Indianapolis, Ind.
Slingluff, W. H., Chicago.
Stadermann, A. L., Terre Haute, Ind.
Snider, V. D., Kansas City, Mo.
Speed, Charles J., Chicago.
Smith, W. L., Neillsville, Wis.
Scoville, George A., Elyria, Ohio.
Schafer, Fred B., Chicago.
Scruggs, W. B., Harrisonville, Mo.
Senska, C. E., Genoa, Ill.
Savage, Manford, Champaign, Ill.
Schock, C. A., Sherman, Texas.
Stigberg, A. O., Chicago.
Seeley, Fred, Elwood, Ind.
Searl, T. A., Painesville, Ohio.
Shear, H. C., What Cheer, Iowa.
Shoemaker, H. B., Toledo, Iowa.
Semple, C. B., Chicago.
Stephens, J. F., Tracy, Ohio.
Steninger, J. A., Parker, S. D.
Stephens, H., Kansas City, Mo.
Schlegel, Geo. H., Chicago.
Somer, Gladys, Aurora, Ill.
Schweer, G. W., Windsor, Mo.
Scott, Henry W., Churubusco, Ind.
Swoyer, C. A., Columbus, Ohio.
Stitt, W. S., Wabash, Ind.
Stack, E., Chicago.
Sloan, W. F., Madison, Wis.
Stone, R. C., Muncie, Ind.
Stanton, L. W., Davenport, Ia.
Stoeffhaas, E. C., Chicago.
Shanahan, M., Chicago.
Tompkins, John F., Chicago.
Tomlinson, Sam, Plymouth, Ind.
Triebner, F. E., Toledo, Ohio.
Tomlinson, R. R., Plymouth, Ind.
Trumbull, L. O., Fort Dodge, Iowa.
Tracy, O. H., Minneapolis, Minn.
Trout, Ira, Arcadia, Ind.
Thomas, W. J., Shelbyville, Ky.
Todd, H. C., Maryville, Mo.
Thompson, W. J., Philadelphia, Pa.
Thorpe, G. P., Wilmington, Ohio.
Trimm, W. H., Ft. Dodge, Ia.
Tewksbury, W. J., Chicago.
Townsend, M. E., Toledo, Ohio.
Taylor, N. S., Lexington, Ky.
Thorne, J. C., Fairfield, Ia.
Thoreson, Miss R., Chicago.
Torrey, C. A., South Bend., Ind.
Traver, L. E., Aurora, Ill.
Trautwein, F., Morrison, Ill.
Thurman, V. E., Salem, Ind.
Taylor, H. B., Columbus, Ohio.
Umbach, M., Ft. Wayne, Ind.
Van Voorhies, F. J., Mt. Vernon, Ohio.
Van Sant, J. W., Washington, D. C.
Voss, J. B., Davenport, Iowa.
Vaughan, S. O., Springfield, Ill.
Van Vleet, M. S., Rochester, N. Y.
Williams, Pearl, Aurora, Ill.
Wilkinson, J. B., Louisville, Ky.
Woodruff, P. H., Chicago.
Willey. T. H., Aurora, Ill.
Woodward, E., Chicago.
Wackerlin, Geo. J., Chicago.
Wallace, H. E., Wabash, Ind.
Wells, E. N., Chicago.
Woodworth, O. H., Arcola, Ill.
Witt, S. E., Chicago.
Walsh, T. M., Chicago.
Woodbury, Ben, Columbus, Ohio.
Wilkins, Cooper, Cleveland, Ohio.
Wilson, C. S., Chicago.
Wilson, J. O., Salina, Kans.
Welsheimer, O. O., Columbus, Ohio.
Westburg, P. A., Chicago.
Watkins, G., Newark, Ohio.
Williams, F. E., South Bend, Ind.
Wood, O. G., Streator, Ill.
Watts, George, Knightstown, Ind.
Williams, F. H., Cleveland, Ohio.
Woods, Frank H., Lincoln, Nebr.
Warner, Claude A., Morocco, Ind.
Ward, Adelbert V., Cleveland, Ohio.
Warner, Eben D., Chadron, Nebr.
Wittemire, L. R., Mansfield, Ohio.
Wesley, E. E., Columbus, Ohio.
Wickersham, R. C., Tipton, Ind.
Wethy, H. M., Kansas City, Mo.
Wilson, W. S., Eminence, Ky.
Warner, W. H., Joplin, Mo.
Wilson, George O., Cedar Rapids, Iowa.
Wasson, B. F., Clinton, Ill.
Wilson, F., Washington, Iowa.
Wimp, J. D., Shelbyville, Ky.
White, H. A., Kansas City, Mo.
Welland, F. H., Chicago.
Willey, Lena B., Aurora, Ill.
Yerrick, A. A., Walkerton, Ind.
Young, F. A., Dowagiac, Mich.
Youmans, T. L., Osawatomie, Kans.
Zeluff, J. E., Toledo, Ohio.

Queries on Theory and Practice

Grounded Phantom Circuit.

I have a metallic circuit (No. 10 B. B. iron) 24 miles long. I have two No. 37-A Western Electric repeating coils. From North Fork, there is a grounded circuit of No. 10 B. B. iron, 12 miles long. I want to install a coil in our exchange and one at the end, of the metallic (North Fork) and take the grounded circuit out of the coil, making the grounded cir-



Grounded Circuit Phantomed on a Metallic Circuit.

cuit, phantom from North Fork to the exchange. Do you think this is practicable. A glance at the accompanying diagram (Fig. *A*) will make clear to you what I desire to accomplish. I noticed an arrangement something like this in TELEPHONY some time ago. However, I don't think the kind of coil was specified.

The plan is practicable. You must, however, connect the coils as shown in Fig. *B*, so that the jack (100) for the physical circuit shall be insulated from the part of the line between the repeating coils. Failure to connect exactly as shown will result in cross talk beween the physical and phantom circuits, especially if the metallic circuit (100) is connected to any grounded line in the exchange.

Grounded Farm Lines and Metallic Circuits.

We have three grounded farm lines which are arranged, (Fig. 1-*A*), as follows: The three grounded lines run on the same pole lead for a distance of about five miles, at which point No. 1 leaves the main line and runs about five

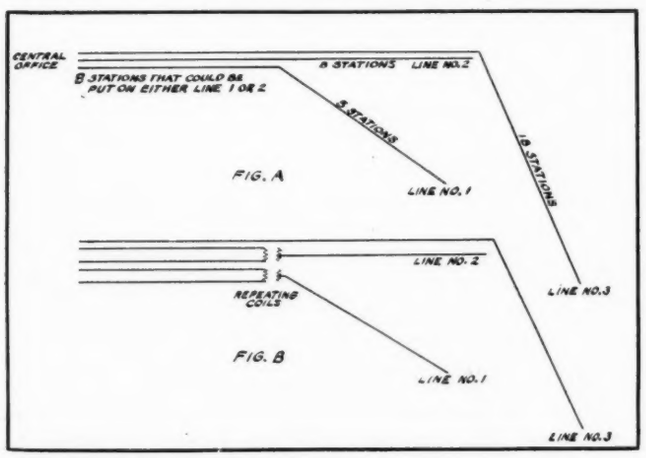


Fig. 1. Present Line and Contemplated Arrangement.

miles on a lead of its own on which line there are no other wires. Lines No. 2 and 3 continue on the same pole lead about five miles beyond the point where line No. 1 branches off. Then line No. 2 runs two or three miles on a lead of its own, picking up a few more stations. Line No. 3 runs about 15 miles farther or beyond the point where line No. 2 branches off. It has about 18 stations, all of which are beyond the point where lines No. 2 and 3 separate.

Of course, there is a good deal of cross talk on these lines, which the company desires to eliminate as far as possible without making all of the lines full metallic. The writer has an idea which he believes would not be too expensive, provided the service would be materially improved.

The plan is as follows: To make lines No. 1 and 2 full metallic for the first five miles, which would be to the point where line No.1 leaves the main lead and at that point put in repeating coils, so that the rest of both line No. 1 and line No. 2 would come onto the metallic part of its line through a repeating coil. Line No. 3 would still be a grounded line all the way. Under this arrangement, would there be any cross talk on lines No. 1, 2 and 3, between the central office and the repeating coil?

Of course there would be cross talk on lines No. 2 and 3 where they run on the same pole lead as grounded lines, but would this cross talk go through the repeating coil so that it would be heard on that portion of the line that was metallic? Would there be any more cross talk if this method I have described were changed at the repeating coils so that line No. 1 would be connected in such a way that it is a grounded phantom?

Can you give me a diagram for transposition of these lines built in the way I have described? If my plan is not practicable, can you suggest some other method of running these wires?

The arrangement which you propose will work except that there will still be cross talk between lines 2 and 3, due to the second five miles where they are both earth return circuits. This can be obviated by making No. 2 full metallic for ten miles instead of five. Under either arrangement,

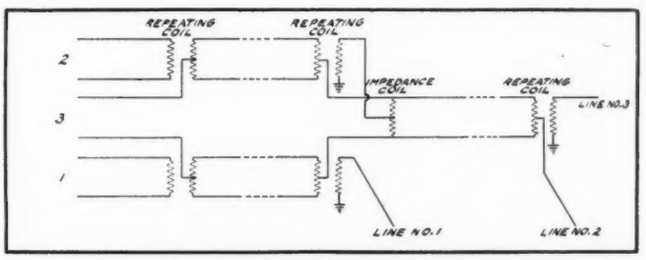


Fig. 2. A Suggested Arrangement.

there will be no cross talk due to the first five-mile stretch; it would all be due to the second five miles. Cross talk originating on the grounded portion of any line, will be carried onto the metallic portions, by the same action which carries the conversation through.

Another plan may be used (Fig. 2). It involves only five miles of wire and the repeating coils. The No. 2 line is metallic to the end of the first five miles, simplex or grounded phantom the second five miles, and single wire the rest of the way. Line No. 3 is the longest line and will profit by being phantom for five miles, instead of going through repeating coils as a physical. Calculate the relative costs of wire and repeating coils in determining your course. It seems to us that it is cheaper to make Line No. 2 of Fig. 1-*B* metallic ten miles rather than use the arrangement of Fig. 2.

Exemptions from Nine Hour Labor Law in Nebraska.

The Nebraska state senate has recommended for passage an amendment to the female nine hour labor law, providing that women telegraph or telephone railroad operators are to be exempt, and also telephone operators in exchanges where the revenue does not exceed $300 per year. The bill was introduced by Senator Spirk and originally included only the female railroad operators, now numbering about three in the state. It was later amended to include the small exchange telephone operators, who, it was pointed out, are usually women in private homes with an average of half a dozen farm lines, out in the western part of the state.

From Factory and Salesroom

Conventions: Illinois, Springfield, February 16, 17, 18; Iowa, Des Moines, March 9, 10, 11

Automatic Telephone Men Guests of Company at Chicago.

Operating telephone men to the number of 40 and representing 18 companies using automatic telephone equipment and having in service some 350,000 lines, were guests of the Automatic Electric Co., at its Chicago factory last Friday and Saturday, February 5 and 6.

The occasion was the regular February session of the Ohio Automatic Telephone Association, comprising the companies operating automatic exchanges in Akron, Bucyrus, Cambridge, Columbus, Dayton, Kenton, Newark, St. Marys and Van Wert, Ohio, and Richmond, Ind. This organization, formed nearly three years ago, has for its object the interchange of ideas between those engaged in the operation of automatic telephone equipment. The success and value of the association has exceeded the most sanguine expectations of its founders. Regular meetings are held throughout the year, each exchange of the member companies being visited approximately every twelve months. At each session the report of a committee appointed for the purpose of inspecting the plant is read and discussed, the methods in vogue in the exchanges being commented upon, and much helpful criticism thus brought out. Some technical subject pertaining to automatic operation is discussed at each meeting, and the experience and progress of each individual is thus made available to all members.

The Automatic Electric Co., which is also a member of the Ohio association, acts as host to the organization for one of these meetings each year, and special invitations are extended to all companies operating automatic equipment to have representatives present at these annual conventions. The program followed at the recent session in Chicago conformed closely with those of the regular meetings. It comprised papers on various important topics and their discussion, together with an inspection of the factory by committees of visiting operating men.

The convention covered two days, the morning of the first being devoted to the factory inspection, and the balance of the time was given over to papers and discussions. The more serious business of the convention was interrupted Friday night when the visitors were the guests of Automatic Electric Co. at a theater party at the Illinois, where "Sari" was witnessed, during which Miss Hajos, the leading lady and Mr. Gilbert, the comedian, very clearly injected a reference to the automatic dial into their lines as a compliment to the telephone men present. Luncheon was also served by the company between the morning and afternoon sessions on Saturday.

The program of the two days was as follows:

Friday Morning.

Inspection of factory by committees appointed by the Ohio Automatic Telephone Association.

Friday Afternoon.

"Standardized Nomenclature; List of Standard Expressions Used in Automatic Plants," by Roy Owens, Automatic Electric Co. This was followed by a general discussion.

Demonstration and paper on "Automatic Rural Line Equipment," by B. D. Willis, Automatic Electric Co. The discussion was led by Guy Watkins, Newark, Ohio; C. A. Swoyer, Columbus, Ohio, and B. H. Collins, Grand Rapids, Mich.

"Transmission Losses in Various Circuit Combinations, Practical and Theoretical," by Arthur Bessey Smith, Automatic Electric Co. The discussion was led by A. J. Seymour, of St. Paul, Minn.

"Multi-Office Installation of Automatic Equipment and Gradual Change to Full Automatic," by Bernard C. Groh, Automatic Electric Co. The discussion was led by Fred L. Baer, Automatic Electric Co., who explained interesting features in connection with the Sydney, Australia, cut-over. A letter from Leo Keller, of the Home Telephone Co., of Los Angeles, Calif., told of the experiences of that company in cutting over its exchanges.

Saturday Morning.

"Automatic Equipment in Foreign Governmental Exchanges," by E. A. Mellinger, Automatic Electric Co., followed by a general discussion.

Report of the inspecting committees and discussion of report. This feature of the program was of particular value, as it brought to those engaged in the manufacture of automatic equipment the ideas of the men who operate that apparatus.

Saturday Afternoon.

Demonstration and Description of "Long Distance Automatic Calling and Switching to Toll Lines," by John Wicks, Automatic Electric Co. The discussion was led by James E. Mooney, of Grand Rapids, Mich.; F. B. Moody, Columbus, Ohio, and C. A. Torrey, South Bend, Ind.

"Automatic Private Branch Exchanges and Private Automatic Switchboards," by J. H. Finley, Automatic Electric Co. The discussion was led by E. D. Talbot, of Buffalo, N. Y.

As will be noted, the subjects chosen for consideration were very timely and practical and it was felt that all who took part in the meetings derived great benefit from them. The most remarkable feature of this convention, however, was the close and harmonious relations thus revealed as existing between Automatic Electric Co. and the companies operating the equipment manufactured by that organization. It is believed that an even fuller mutual understanding of the problems confronting the makers and users of Automatic equipment will result from these meetings.

The following is a list of those present from automatic exchanges: W. C. Ballinger and T. G. Snyder, Ohio State Telephone Co., Akron, Ohio; H. O. Dutter, Bucyrus Telephone Co., Bucyrus, Ohio; E. D. Talbot, Federal Telephone & Telegraph Co., Buffalo, N. Y.; R. A. McBride, Cambridge Home Telephone Co., Cambridge, Ohio; and K. W. Fort, C. M. Waggoner and R. B. McCowan, Illinois Telephone & Telegraph Co., Chicago.

Gansey R. Johnston, F. B. Moody, C. A. Swoyer, W. A. Shoemaker, G. H. Palmer, C. M. Balbert and C. O. Grace, Ohio State Telephone Co., Columbus, Ohio; A. W. Surrell and R. A. Folsom, Ohio State Telephone Co., Dayton, Ohio; F. L. Fisher, Decatur Home Telephone Co., Decatur, Ill.; and J. E. Mooney and H. I. Collins, Citizens Telephone Co., Grand Rapids, Mich.

R. L. Barry, A. C. Seymour, A. C. Cragg, W. H. Roll, A. O. Knell and C. A. Beliveau, Tri-State Telephone & Telegraph Co., St. Paul, Minn.; C. E. Hollander and Guy Watkins, Newark Telephone Co., Newark, Ohio; W. M. Bailey and B. J. Anderson, Home Telephone Co., Richmond, Ind., and Geo. H. Davis, Rushville Co-operative engineer; F. L. Eldridge, sales representative; Edward Telephone Co., Rushville, Ind.

James A. Rae, Sioux City Telephone Co., Sioux City, Iowa; E. E. Dalcey, C. A. Torrey, J. H. Mercer and F. R. Montague, South Bend Home Telephone Co., South Bend, Ind.; R. K. Judy, St. Marys Telephone Co., St. Marys, Ohio; J. W. Longwell and Fred J. Grupp, Van Wert Telephone Co., Van Wert, Ohio; and H. Heineman, H. I. Crawford, Wausau Telephone Co., Wausau, Wis.

Kellogg Representatives at National Conventions.

Two of the largest and most impressive exhibits at the national conventions held during January and February in Minneapolis and Chicago, shown in part in the accompanying illustration, were displayed by the Kellogg Switchboard & Supply Co., of Chicago.

Kellogg officials and representatives at the Minneapolis meeting were: L. D. Kellogg, president; A. J. Carter, general sales manager; H. D. Currier, chief engineer; E. G. Lawrence, Minnesota representative; C. C. Huffman, Wisconsin; G. H. Crandall, Illinois; O. F. Cassaday, sales engineer; F. L. Eldridge, sales representative; Edward I. Pratt, advertising manager, and Fred Seeley, sales representative.

At the Kellogg exhibition, Chicago, the following were present: L. D. Kellogg, president; J. B. Edwards, vice-president and general manager; J. G. Kellogg, vice-president; A. J. Carter, general sales manager; H. D. Currier, chief engineer; H. A. White, Kansas City office; Ben Woodbury, Ohio representative; T. L. Dunlap, Missouri; J. A. Campbell and B. H. Blake, Indiana; G. H. Crandall, Illinois; H. B. Dudley, Michigan; C. C. Huffman, Wisconsin; W. R. Hind and W. S. Boze, Iowa; C. M. Bowling, Indiana and Illinois; E. G. Lawrence, Minnesota; L. R. Foote, Nebraska; S. M. Lewis, Southern representative; Fred Seeley and F. L. Eldridge, sales representatives; O. F. Cassaday, sales engineer; C. D. Boyd, sales engineer; E. A. Woodward, railway sales engineer; Edward I. Pratt, advertising manager; W. C. Swain, advertising department; M. B. Stazek, engineer; W. R. Brewer, supply department; G. W. Peck, Jr., D. J. Gillespie and A. D. Boal, sales office.

A Section of the Kellogg Exhibit as Presented at Recent National Conventions.

First Lessons in Concrete Work.

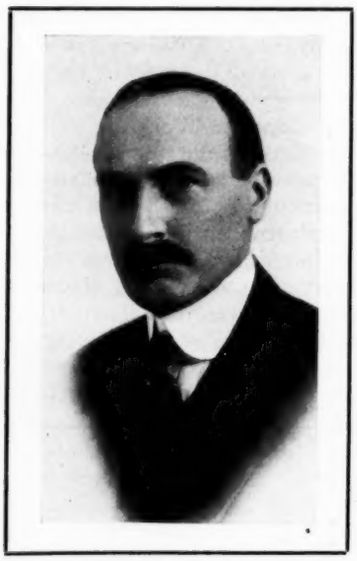
"First Lessons in Concrete Work" is the title of a 40-page booklet containing practical information about small concrete jobs. It is written particularly for the use of telephone companies, railroads, industrial plants and other concerns having a limited amount of concrete work to do. Specific directions as to the construction of floors, sidewalks, walls and other light concrete work are given, together with information as to methods of mixing concrete, its ingredients and the proportions to be used. Considerable data is included as to the cost of concrete construction in its simplest forms. Illustrations are plentifully used, in order to make clear the details of the forms in pouring the concrete.

The booklet is issued by the T. L. Smith Co., 1145-AA Thirty-second street, Milwaukee, Wis., which desires to place copies of it in the hands of all interested parties.

TELEPHONY's readers may obtain copies, without charge, by writing to the company at the address given.

Walter C. Polk Enters Consulting Engineering Field.

Walter C. Polk, for the past five years general superintendent and engineer for the Kansas City Home Telephone Co., of Kansas City, Mo., has resigned his position with that company to become affiliated with the Gary Investment Co., of Kansas City, as consulting engineer. Mr. Polk will not only continue to act in an engineering advisory capacity for the Kansas City Home company, and all other properties that the Gary interests may be connected with, but he will engage in outside interests in the consulting engineering field, so long as such employment does not conflict with the interests of the Gary Investment Co. or any of its properties.



W. C. Polk.

Mr. Polk was born in New Vienna, Ohio, in 1869. His early education was acquired in his native town. Graduating from the local high school, he entered the Ohio State University, at Columbus, graduating with honors with a degree of civil engineer. His first work in his chosen profession was in the capacity of civil engineer in the construction of the Sandusky & Hocking Railroad, the Zanesville Terminal Railroad and the Columbus & Sandusky Short Line. While serving with these companies, he also acted in the capacity of mining engineer in connection with the companies' coal mines along the routes of the roads.

In the year 1895 he entered the services of the Central Union Telephone Co., as assistant superintendent of construction, having charge of all its conduit and cable underground systems throughout the states of Ohio, Indiana and Illinois. He later served as assistant general foreman for that company, and also in the capacity of superintendent of construction of the Northern Ohio district, which position he resigned in June, 1901, to take charge of the engineering work for the Central Construction Co., of Wauseon, Ohio. During his service with that company he constructed a number of large Independent plants, among which may be mentioned the plants at Toledo, Ohio; Louisville, Ky.; Kansas City, Mo., and Utica, N. Y.

From 1907 to 1910 Mr. Polk was engaged in special appraisal and report work, with headquarters in Toledo, Ohio, and in the latter year was appointed general superintendent of the Kansas City Home Telephone Co., which position he occupied until his recent appointment to the staff of the Gary Investment Co., as consulting engineer. During his 20 years of telephone work, Mr. Polk has acquired a reputation as one of the leading telephone engineers of the country.

Paragraphs.

THE FAHNESTOCK ELECTRIC CO., of Brooklyn, N. Y., has issued circulars describing the No. 30 and 31 Fahnestock connectors, the Detroit connecting block, the window sill connecting block and the Fahnestock telephone cable connecting strip.

Michigan Commission on Routing of Interchange Business.

The Michigan Railroad Commission has handed down a ruling in the protest of the Reading Central Telephone Co., which operates at Reading and Cambria, Mich., to the Michigan State Telephone Co.'s refusal to transmit toll calls coming into its Hillsdale office over its Independent lines.

A few months ago the Reading Central Telephone Co. bought out the Bell lines and equipment in Reading, the Bell company later placing its through toll lines in the offices of the Independent company. Immediately after the merger of the Michigan State and Southern Michigan companies was effected, the Bell company refused to transmit toll calls that came into its Hillsdale office over Independent lines, over any other Independent line leading out of that office, but insisted they must be put through on the Bell lines.

The Reading company filed a protest with the state railroad commission.

After hearing the complaint and reply, the commission ruled that the Reading company and its subscribers and patrons had the right to use the Independent circuit, not only to all parties in Hillsdale, but to all telephones in the state of Michigan, whether Bell or Independent. And, further, that when a telephone call originated at an Independent station anywhere in the state of Michigan for Reading or through Reading, it should be routed all of the way over Independent lines, and especially over the Reading circuit of the Reading Central Telephone Co. The ruling was put into immediate effect by the Michigan State company in its Hillsdale exchange.

This decision will have an important bearing on the telephone situation wherever the two companies have toll lines on the same switchboard, as is the case in many places since the merger became effective.

Merchants of New York Urge State-Wide Appraisal.

At a recent meeting of the Merchants' Association of New York, a resolution was adopted, recommending to the public service commission that a state-wide appraisal of the property of the New York Telephone Co. be made instead of limiting the appraisal, as at present, to the city property. The resolution states that such a comprehensive appraisal is indispensable in order to present to the public service commission all the facts necessary for a proper determination of rates, not only in the city of New York, but in all other sections of the state. It is further stated in the resolution that without such a development of facts, any order of the commission adjusting rates within the city of New York will be in grave danger of reversal by the courts.

The report of the committee on public utility and laws relative to the appraisal of the property of the New York Telephone Co. was approved by the directors of the Merchants' Association and the committee instructed to present the report to the New York Public Service Commission, with the request that the appraisal now in progress be broadened as set forth.

The Wisconsin Convention.

The Wisconsin State Telephone Association held its annual convention, Wednesday, Thursday and Friday of this week, at Madison. Owing to it coming so late in the week, TELEPHONY was unable to secure a report of the meeting before going to press with this issue. A full report will appear in next week's issue.

Roachdale (Ind.) Company Surrenders Its Franchise.

The Roachdale Union Telephone Co., of Roachdale, Ind., has notified the Public Service Commission of Indiana that it intends to surrender its franchise, and operate under the indeterminate franchise plan.

Out of the Mail Bag

Even though the fighting trenches are thousands of miles distant, echoes of the great European war frequently are heard in TELEPHONY's office. Arthur W. F. Pooley, Auckland, New Zealand, in a letter enclosing remittance for his subscription, says: "Although the great war is raging and one is continually putting one's hand in one's pocket to aid distress, I manage to gather enough to keep TELEPHONY coming. I derive a great amount of good from your publication."

A letter addressed to E. W. Smith, local agent of the Saskatchewan Government Telephone Department at Regina, Canada, has been returned as undeliverable, by the Canadian postoffice. Across the envelope is written the grim explanation, "Left for the war."

Here's hoping that Soldier Smith returns to his Canadian home, safe and sound, after the hostilities cease, able to take up again the peaceful pursuit of a telephone man!

W. S. Pottorff, of Leon, Ia., sends in a photograph, from which the accompanying illustration was made, and a letter in which he says: "I am sending you a photograph of a bunch of issues of TELEPHONY. On the left is a telephone engineering course, and to the right is a testing outfit. The floor is covered with blueprints. A man with a little practical experience who has these things and devotes a little time to them each evening, will soon be fitted for a position in the telephone business."

A Practical Telephone Man's Outfit.

It is apparent that Mr. Pottorff is a man who is "on the job." With the ambition he displays and the tools he has to work with, he is bound to succeed. The man who works overtime to perfect himself in his line and increase his efficiency makes his own way and compels recognition. That is the kind of spirit which is sure to win.

B. D. Williams, president of the Auburn (Ky.) Home Telephone Co., in a recent letter says: "We note in TELEPHONY of December 19, the following in Mr. Kelsey's article: 'Some pretend to be sympathetic, but I have yet to see or to know a telephone man who has never yet received a Western Electric invoice.'

"If Mr. Kelsey will take the time to come over and examine our books, or files, if he can find an invoice in our files or the name of the Western Electric Co. on our books, we will pay his expenses and set up the cigars. What say you, Mr. Kelsey? With best wishes for TELEPHONY and its editorial staff, and may it grow and prosper through the year 1915, we remain."

Mr. Kelsey would like to visit the Blue Grass state, even if he had to decline the cigars—he being a non-smoker—but he congratulates President Williams on the sanitary condition of his files and wishes him and the Auburn company a successful year in 1915.

Fred E. Winslow, a Chicago subscriber, in remitting for two years' subscription in advance, says: "I wish to express my appreciation of the increase in usefulness of our paper in the past six to nine months. Let the good work go on—more boosting and less knocking. Telephony is a legitimate business and not a sentiment."

T. J. Dwyer, of the Northwestern Telephone Exchange Co., at Minneapolis, Minn., in a friendly letter congratulates J. C. Kelsey on becoming interested in TELEPHONY, which he calls "the best magazine published." Mr. Dwyer has been a reader of the publication for years.

H. E. Wilder, secretary and manager of the Home Telephone Co., at Angola, Ind., sends in a check for five subscriptions, and says, "We could not stay in business without TELEPHONY." The Home company operates exchanges at Angola, Orland, Metz, Fremont, Salem Center, Ray, Pleasant Lake, Flint and Hamilton, and is manned by an efficient, up-to-date force of employes.

TELEPHONY receives many and various requests for information. Here is one in point. O. R. Shaw, secretary of the Clarke County Mutual Telephone Co., of Osceola, Ia., wants this publication to locate Joe Moran, a cable splicer, for him. "His home is said to be in St. Louis," writes Mr. Shaw. "We would like to get him to do some splicing for us. Don't know as you can do us any good, but thought you might." If any of our readers know the whereabouts of Joe, please advise Mr. Shaw at the above address.

"I am more than satisfied with your paper, and enclose check for another year's subscription," writes Will F. Taddiken, manager of the Morganville (Kansas) Telephone Co.

Another subscriber, who, for local reasons, desires his name withheld, expressed the same idea in a letter in which he said: "Europe is reminding us that what General Sherman said about war is absolutely correct. Is is not about time that those in the telephone business in the United States agreed that war is no longer profitable? Why should not Bell and Independent co-operate and obtain from commissioners and public the full rights the telephone industry deserves? This may sound like heresy to some of my good Independent brethren, but let them think it over. The Bell organization knows and admits—privately—that it cannot do all the telephone business in this country. It knows full well that it cannot successfully compete with locally-owned companies in thousands of places. There is ample room for both sides and they should cease trying to annihilate each other and go ahead and develop the telephone industry, which is a real business and not merely a factional broil."

"Can't do without TELEPHONY," writes Arthur E. Newlin, of Hutsonville, Ill. "Here's my check and keep the paper coming along."

"Enclosed find check for my subscription to TELEPHONY," writes James E. Mallory, Wellsville, Kans., "I have particularly enjoyed your articles on 'Public Relations of Utilities in Theory and Practice.'"

Legal Cases and Decisions

By A. H. McMillan

Disconnecting for Arrears and Tolls.

"Two co-operative telephone companies, *A* and *B*, incorporated under the laws of New York state, exchange service with each other giving free use of all lines. The *A* company signs a contract with a local company for toll connections, being responsible for collections.

"Toll calls begin to originate with the *B* company passing over *A*'s lines to the local company. *A*'s operator registers *B* tolls and now the *A* directors send a bill to the directors of the *B* company for toll charges, allowing them a commission for collecting. The *B* company sent out bills for the tolls and some subscribers refuse to pay. Can the *B* company cut those who refuse to pay off the lines and refuse service even though they are fully paid up in their yearly dues? Or can the *B* company only refuse toll service and be compelled to give local service?

"One of *A*'s subscribers has been sent a notice to the effect that if he does not pay his toll in five days, his service will be cut off. But he says as long as his yearly dues are paid, we do not dare to disconnect him. We see no reason why we cannot disconnect him since he has used our lines and switchboard and operator during these toll connections and since our directors have passed a resolution stating that all subscribers in arrears for dues or tolls are to be given a five-day notice and then disconnected if they do not pay."

It is our opinion that the *B* company can disconnect those subscribers who refuse to pay toll bills. This is particularly so in view of the resolution or rule adopted by your directors requiring all subscribers in arrears for dues or tolls to be disconnected if they do not pay after a five days' notice. Such a rule or regulation is binding upon all subscribers who have notice of it, provided it is reasonable. The rule in question seems to be very reasonable as otherwise the company will have no way of enforcing the payment of tolls. Irwin vs. Rushville Co-operative Telephone Co., 161 Indiana, 524, 69 Northeastern, 258.

Height of Wire Over Pasture.

Suit was brought against a telephone company for causing the death of a minor on account of its negligence in not properly maintaining its telephone wire where it crossed the pasture of the minor's father. The telephone line had been constructed across the pasture with the consent of the owner of the farm, but without compensation, under an agreement with the owner that it would place its wires on poles sufficiently high to render them safe and to keep and maintain the line in that condition. The boy, who was nine years old, started for the pasture on the family horse to bring in the cows. When next seen, he was found dead in the pasture. The wire was found broken in two and one of the poles that supported it was broken off and lying on the ground.

From all the evidence, it seems that the horse was ridden into the wire which broke and was wrapped around her limbs and lacerated her body; that she then ran away with the boy over a steep embankment until she fell and killed him. The court held it was the duty of the company to keep its agreement to maintain the wire at a sufficient height to make it safe and that the company's failure to do so in this case entitled the boy's father to recover a verdict. Coen vs. Central Telephone Co., 146 Northwestern, 998.

Guy Wire and Automobile.

Where an automobile, driven at a high rate of speed at night, has struck a railroad crossing and then a guy wire attached to a telephone pole and extending into the highway, resulting in injury to the car and the occupants, the question of whether the railroad crossing or the wire was the proximate cause of the accident, and how far the preceding event of the car striking the crossing operated in producing the final catastrophe, was held to be for the jury. The company was held not entitled to a verdict on the ground that the evidence was insufficient to show it caused the accident, and that the jury should not be permitted to guess or speculate between such causes.

It was held also that the guy wire attached to a telephone pole and anchored at a point near the travelled part of the highway, was a public nuisance if its location meant danger to the safety of travelers, or tended to obstruct or render dangerous their passage over the highway. Pacific Telephone & Telegraph Co. vs. Hoffman, 208 Federal, 221.

Failure to Employ Messenger as Negligence.

In an action against a telephone company for failure to deliver a telephone call to persons who would have notified the plaintiff of her brother's death, the evidence showed that the sender of the call was told that such persons were out of town, and that a messenger could be hired for $3. It was held to be a question for the jury whether failure of the plaintiff to employ the messenger was contributory negligence which would defeat her right to recover. Southwestern Telegraph & Telephone Co. vs. Dominy, 160 Southwestern, 315.

Destruction of Trees.

Owners of a residence in front of which, in the parkway between the sidewalk and the pavement, were located shade trees which an electric company practically destroyed in placing its wires and poles through the depths of them, brought suit for damages. The company contended that the easement to the entire street, including the parkway vested in the city in trust for the ordinary and necessary purposes to which the streets of a city are usually subjected, including right to erect poles therein. Hence the company contended that the property owner had no right to damages on account of the destruction of the trees.

The court held that the company had no right to the trees without compensating the owner. Reinhoff vs. Springfield Gas & Electric Co., 162 Southwestern, 761.

Condensed News Reports

Officers of Companies Are Urgently Requested to Forward to Us Promptly All Financial and Other Statements as Soon as Issued and Any Items of Interest as to Their Plants and Systems

Personal.

WARREN KNAPP, of Flora, Ind., has been appointed manager of the Flora Telephone Co., at Delphi, Ind.

J. C. CLEMENTS, formerly manager for the Mountain States Telephone & Telegraph Co., at Benson, Ariz., has been promoted to the managership of the company's exchange at Deming, N. M.

S. B. RIDGE, of Pittsburgh, Penna., has been appointed plant engineer on the engineering staff of the receivers for the Central Union Telephone Co. under Kempster B. Miller. Mr. Ridge was formerly connected with the engineering and plant departments of the Central District Telephone Co., at Pittsburg, Penna., on the staff of S. P. Grace.

LEROY PARKER, for a number of years auditor of the United States Telephone Co., the Columbus Citizens' Telephone Co. and other companies now merged in the Ohio State Telephone Co., has been made comptroller of the consolidated organization, with headquarters at Columbus. C. J. Queen, who has been Mr. Parker's assistant, becomes general auditor of the Ohio State company.

Obituary.

CHARLES G. STARKS, editor and proprietor of the Berlin, Wis., Daily Journal and for many years identified with the telephone business in that vicinity, died recently at the age of 63 years. Mr. Starks, it is said, built the first telephone line between Berlin and Omro.

CONDENSERS

A Word to Makers and Users of Condensers

You want to make, or buy, the most reliable and up-to-date Condenser.
Then use, or specify, Metallized Paper—Mansbridge patent—instead of the old fashioned solid foil.
Condensers made with solid foil break down internally sooner or later, generally **sooner.**

Mansbridge Type Condensers are Self-Sealing and cannot be internally short-circuited. If one is broken down by a lightning or high-tension discharge, or by mechanical damage, it automatically and instantaneously seals up, this being the unique and characteristic property of the metallized paper.
You can drive a pin right through a Mansbridge Condenser and the capacity and insulation will still be O. K.! Sounds impossible, but it's solid fact!
Sample—complete with pin—sent to any skeptic.

Millions—literally millions—of Condensers made from metallized paper—Mansbridge process—are now in use all over the world, and the number of satisfied users increases daily.

Complete Satisfaction

That's the reason why the Mansbridge Condenser has made good.

Mansbridge Condensers are **More Reliable, Lighter, Smaller and no more Costly** than those of the old fashioned solid foil type.

They have been adopted exclusively by the English government Telegraph and Telephone Administrations; and they are made under license by Western Electric Company, Ericsson Mfg. Co., Electric Specialty Co., Stromberg-Carlson Co., American Electric Co., and by numerous other licensees all over the world.

Insist upon having MANSBRIDGE CONDENSERS and save money in first cost, and also in maintenance.

For full particulars and for terms of manufacturing license in U. S. A. and Canada apply:

G. F. MANSBRIDGE, Mount House, New Barnet, England

F. W. WHITTEN, traffic superintendent of the Central Union Telephone Co. for the state of Ohio, died at a hospital in telephone business for about 14 years, with the New York Telephone Co., the Chicago Telephone Co., and since 1911 Columbus from meningitis. Mr. Whitten was engaged in the with the Central Union Telephone Co.

New Companies and Incorporations.

CLIO, ALA.—The Clio Telephone Co. has been incorporated with a capital of $10,000. The incorporators are: G. E. Jones and E. W. Norton.

FISHER, ILL.—The Fisher Telephone Co. has recently been organized and the following officers have been elected: Isaac Heiser, president; R. A. Sturgeon, secretary; G. C. Williams, treasurer.

VENEDY, ILL.—The Stone Church & Northern Telephone Co. has been incorporated with a capital of $500. The incorporators are: W. F. Segelharst, W. Maschhoff, W. Borrenpohl, H. Harbens, Adolph Jacobs and John Huelskoetter.

GLASGOW, KY.—The Farmers Line Bowling Green Road Telephone Co. has been incorporated with a capital stock of $99, by L. E. Holman, J. M. Speck, J. F. Read and G. W. Dorsey.

SILER, KY.—The Poplar Creed Telephone Co. has recently been incorporated with a capital stock of $500 by the following: Lee Rose, Thomas Peirce and B. A. Lee.

HARRISON, MICH.—The Long Lake Farmers' Telephone Co. has been organized by the following: D. U. Walling, A. W. Toman and C. C. Pifer. The capital stock is $1,000.

CANBY, MINN.—The Canby Telephone Co. has been organized recently with a capital stock of $50,000. The incorporators are: Thomas Stringer, president; A. J. Swanson, vice-president; C. Schanning, secretary; J. P. Weber, treasurer.

ANNVILLE, PA.—The South Annville Rural Telephone Co. has recently been organized with a capital stock of $10,000. The incorporators are: J. M. Early, B. H. Gingrich, J. M. Bomberger, J. L. Heagy and J. H. Gingrich.

HANOVER, N. D.—The Hanover Mutual Telephone Co. has recently been incorporated with a capital stock of $2,700. The incorporators are: C. Z. Mallen, J. H. Albers, Fred Wilkins, August Oestrich, H. E. Henke and Philip Maier.

Elections.

NUCLA, COLO.—The Farmers Mutual Telephone Association has recently elected the following directors: E. G. Chamberlain, Con Simoens, W. H. Ray, S. R. Cone and W. A. Hopkins.

PLYMOUTH, ILL.—The Plymouth Mutual Telephone Co. has elected the following officers for the ensuing year: President, F. L. Smith; secretary, Walter Huey; treasurer, S. M. Talbot; manager, W. O. Tuck.

LOW MOOR, IOWA.—The Low Moor Mutual Telephone Co. elected the following officers at its regular annual meeting held recently: President, T. H. Dann; vice-president, Geo. Crone; secretary, J H. Thiessen; treasurer, Frank Haring; board of directors, T. L. Hill, G. Voss, Fred Hass, Charles Beckwith and Charles Stier.

JONESVILLE, MICH.—The Fayette Rural Telephone Co. held its annual election recently at which the following officers were elected for the ensuing year: President, C. T. Kimball; secretary, Robert Carter; treasurer, E. C. Adams.

Financial.

GRAND RAPIDS, MICH.—The Citizens Telephone Co. has declared its regular quarterly dividend of 1½ per cent., payable January 20.

LEMOYNE, OHIO.—The Lemoyne-Woodville Telephone Co. declared its regular annual dividend of 6 per cent. at its annual meeting, held recently.

MILWAUKEE, WIS.—The Wisconsin Telephone Co. has declared a regular quarterly dividend of $2 per share.

Miscellaneous.

NOTASULGA, ALA.—The exchange of the Notasulga Telephone Co. was recently destroyed by fire.

MANGUM, OKLA.—D. H. Wright has sold his interest in the Mangum Telephone Co. to his partner, A. Gordon. The system now serves 500 subscribers. Mr. Gordon is planning to install metallic circuits and generally improve the system.

PARKERS LANDING, PA.—The exchange of the Bell Telephone Co. of Pennsylvania in this town was completely destroyed by fire recently.

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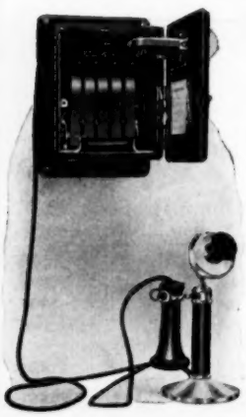

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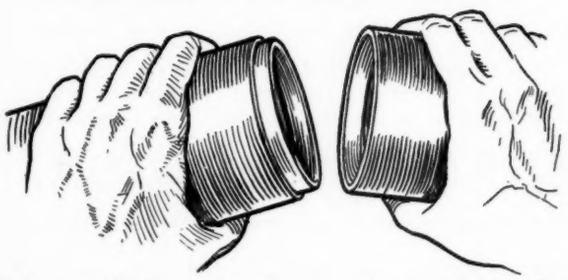

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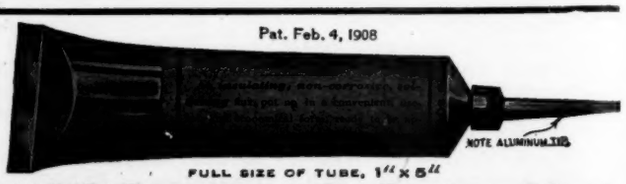

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